FEBRUARY, 1883.

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AMERICAN AGRICULTURIST.

FOR THE FARM GARDEN & HOUSEHOLD

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Copies of letters received from Mr. Jesse L. Delano, author of the Prize Essay on Potato Culture, published in Transactions of Franklin County, Mass., Agricultural Society, 1881:—

SUNDERLAND, MASS., October 17th, 1882.

DEAR SIRS:—I am now in a condition to report in regard to the effects of The Mapes Potato Fertilizer. I took four separate pieces of land of equal size. The land was all similar, in the same condition as near as could be taken. Planted all pieces April 19th, and gave them the same cultivation and care. The result was as follows:

First piece.—I gave good strong manure from the barn-yard, at the rate of 40 two-horse loads to the acre, one-half plowed in and one-half put in the drill.
Second piece.—I gave Mapes Manure, at the rate of 800 lbs. to the acre, one-half harrowed in and one-half put in the drill.
Third piece.—I gave Mapes Manure, at the rate of 1,000 lbs. to the acre, one-half harrowed in and one-half put in the drill.
Fourth piece.—I planted without any fertilizer of any kind whatsoever.

First piece.—Yielded at rate of **220 bushels** per acre. The potatoes were, however, quite badly cut by the wire-worms and grubs, and quite rough.
Second piece.—Yielded at rate of **316 bushels** per acre, of nice, large, smooth potatoes.
Third piece.—Yielded at rate of **340 bushels** per acre, of very large and smooth potatoes, with very few unmarketable ones.
Fourth piece.—Yielded at rate of **140 bushels** per acre, and a good many small ones among them, though smoother than on first piece.

From the foregoing I draw, that with high manuring I obtained **80 bushels** per acre more than where no manure was used, but with Mapes Potato Manure I obtained **176 and 200 bushels** per acre more than where no manure was used. This is the **fourth year** I have used Mapes Manure, and I am more and more satisfied that it is the best thing to raise potatoes with in the market.

(Signed,) JESSE L. DELANO.

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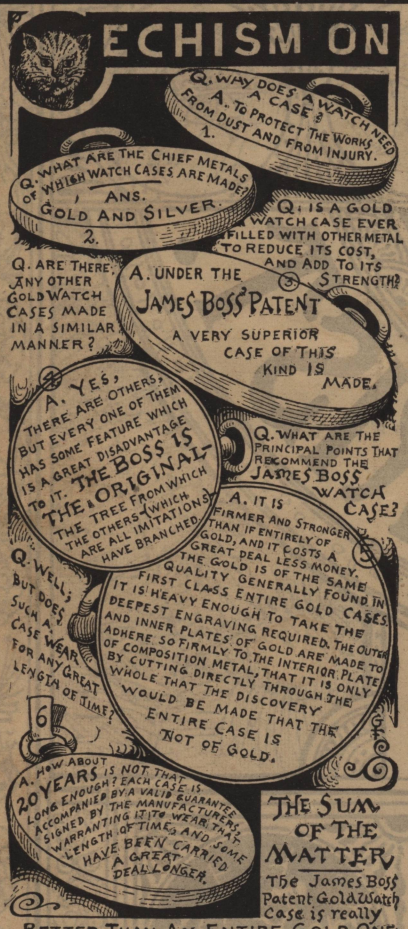

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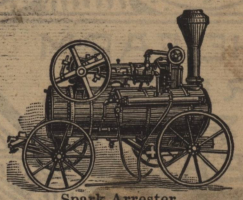

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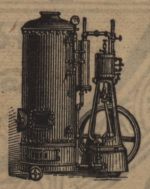

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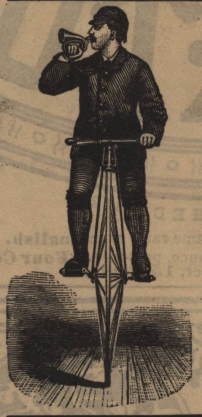

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AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XLII.—No. 2. NEW YORK, FEBRUARY, 1883. NEW SERIES—No. 433.

IN-DOOR AND OUT.

Designed and Engraved for the American Agriculturist.

1. AROUND THE CAMP FIRE.—2. IN DANGER.—3. FROM LOG TO LUMBER.—4. TAKE CARE!—5. AROUND THE COUNTRY FIRESIDE.—6. UNDER COVER.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

Contents of This Number.

[Articles marked with a star (*) are illustrated; the figure with the star indicates the *number* of illustrations.]

FEBRUARY.

Chat With Our Readers.

Our constant wish and aim is to be on familiar, friendly terms with every Reader of this Journal. The purpose of every line and engraving in the reading pages, is to meet the wants and wishes of the greatest number of readers possible.

It is very gratifying to be assured, in a great number of letters, that this feeling *is* reciprocated, that in hundreds of thousands of families, here and there, and everywhere, all over our land, even in the remotest Territories, and in many foreign lands, the *American Agriculturist* is welcomed as a true friend, adviser, and guide. And we have good reason to know that this welcome was never heartier than now.

Acting upon this, we venture a few suggestions, which we believe every reader will receive kindly and respond to.

1st.—Can you not think of some family or person who would be really benefited, in mind and purse, by seeing and reading what appears in a yearly volume of this Journal?

2d.—Will not a kindly, earnest word from you, and the showing of the paper if needed, be effective in introducing it to such persons—and to their advantage, too? This would enlarge our field of work and influence—and, we trust, of *usefulness*.

3d.—We will gladly **reciprocate** your favors by presenting valuable articles from our Premium List. There are certainly in the list of **287** Premiums, besides the many good Books, something you would like. There are articles for one, two, or three subscribers, and upwards. (If you have not the Illustrated Descriptive List of 32 pages, send postal for a copy, which will be promptly forwarded, prepaid.)

4th.—A single hour will, on the average, secure more than one such subscriber and premium. (See head of next column.)

5th.—This leisure month of **February** is an *excellent* time for the above; and especially so, because people are now, or ought to be, planning the coming season's work on the farm, in the garden, in and around the house, and they will, if rightly impressed by you of its utility, gladly embrace the aid this Journal will give them.

6th.—Please **try** a little effort of this kind for once, beginning the day this is read. One or two names a day, or evening, will amount to 25 or 50 in a month, and bring as many Dollars in return.

There is plenty of room. Not one family in ten take any such Journal, while there is not one family in a hundred, the country over, it would not greatly benefit. Mind makes the man, and woman too, and reading such Journals enlarges the mind.

A Dollar an Hour.

Here is a fair specimen of a great number of experiences reported to us. A subscriber, in acknowledging the receipt of three Premium articles, "just what he wanted," says:

"....On casting up the time spent in gathering the subscribers for which I received the three valuable things you presented me, I find I have been paid in cash a little over ONE DOLLAR an HOUR, and all this was during evenings when I should have been earning nothing, except shelling a little corn on the hand-sheller which I made from one described in a former number of the *American Agriculturist*....I mistake. I did, one afternoon, go five miles on horseback to get four names. The roads were so bad I could not go in a wagon, or at night....If I had not got this Premium $20 Suit for myself, and the Wringer and Teaspoons for my Wife, I would have had to pay $33.25 for others like them, or not so good....I have seen several of the subscribers I sent you, since they got their papers, and every one is pleased, and glad he subscribed."

Practical Farm Experiments.

The illustrations and description of Houghton Farm (pages 78 to 80) give the reader some idea of the facilities enjoyed by the proprietors and editors of the *American Agriculturist* for furnishing the readers with the results of practical farm experiments—so vital and important to the agricultural interests of the country. Every farmer should have the *American Agriculturist* for this feature, if for nothing else. Writers at Houghton Farm are every month compiling for the paper the results of their various experiments and observations Four of them will be heard from in the March number.

See other pages for magnificent Special Premiums for subscribers.

Farm Work for February.

Seeds of all kinds should be procured now, that they may be on hand as soon as spring opens. Dealers are overrun with orders just at sowing time, and they do not then give the quickest and most careful attention. It is of the greatest importance that only the best seed of the choicest sorts be used. Canvass the whole subject of seeds with much care, and it will be time well spent. There is no economy in sowing cheap seeds, and when there are weed seeds present it is a great mistake and a source of much future trouble.

Manure.—The making and saving of manure are among the most important labors on the farm in winter. The value of this product depends upon the character of the food given to the animals; the kind, age, and care of the stock, and the attention that it receives after it is dropped. Manure from the stables may be put in square, compact piles, which will retain sufficient heat to keep out the frost and rot rapidly. By adding the fresh manure to the top, and forking in the sides, the whole heap will be in fine condition for use in the spring, and will give quick returns on any field crop. The worst arrangement is to have the droppings scattered over a large open yard, to be frozen and trampled into the mud.

Farm Animals should be kept neat and clean. Examine young cattle for lice; these pests may be found along the back and neck of the animal. Rub the infested parts with kerosene oil, diluted with an equal quantity of sweet oil, or lard.

Horses that are idle may be kept in a yard with an open shed for shelter, and if fed with a few ears of corn for their grain, will keep in good condition. Work horses need good stables and an abundance of wholesome food. Use the currycomb and brush daily, thus keeping the surface of the skin in a vigorous and healthful condition. A sharp currycomb is to be avoided, as it irritates the animal. The keen points may be filed down.

Pigs thrive in dry, warm, and well ventilated pens. A large portion of the swine troubles come from too much dampness and filth. The brood sows need special attention, and should be provided with a large, warm room, with fine litter. Give them a mixed diet.

Poultry.—To do well in winter, fowls need a sunny place where they may have sufficient exercise. Brood hens need a warm and quiet place to bring forth their early chicks. These will be ready for the early market, and bring good prices.

Orchard and Garden Work for the Month.

There are many farms on which no orchard is found. The settler in a new country may have some excuse for this, at least for a few years, but even with him an orchard of fine fruit should come early in the development of his farm. We shall continue to teach that every farmer should have an orchard, and guard its interests well.

Orchard Planting is, therefore, a timely theme to consider in February. No one should set an orchard unless he can feel that the trees have the first right to the soil. It is often stated that orchards are unproductive and the trees are degenerating owing to change of climate or other unknown cause, when the real cause of the trouble is starvation. The land has been forced to yield a regular field crop aside from the fruit, without making proper returns in manure or commercial fertilizers. A newly planted orchard should be cultivated by growing only such crops as require manure and will leave the soil in a good condition.

When the trees come into bearing, regular cropping should cease. Turning an orchard into a grain field or meadow is to bring ruin. If kept in clover and pastured with pigs, it is excellent both for the pigs and for the orchard. An occasional plowing turns under the sod, and it becomes a fine fertilizer and keeps the soil in good tilth.

Ordering Trees.—It is best to send in the orders for trees before the spring opens, as they will receive more prompt attention than those of late spring, when work is pressing. Should the trees freeze on the way, the packages may be put in a cool room or under straw to thaw gradually. A mistake is often made in selecting large trees. A two-year-old tree will come into bearing about as soon after setting as one three or four years old, besides being much more sure to live. The larger the tree, the more the roots are injured in transplanting; it is also easier to bring a young tree into good form by early pruning. Other things being equal, buy of the nearest nurseryman. We advise caution in dealing with unknown tree peddlers, who tell wonderful things of varieties exclusively their own. Some excellent nurseries send out agents, and when they are authorized and responsible, it is safe to buy of them. Most of the leading nurserymen publish Catalogues of varieties; it is well to send for some of these and compare the prices, etc. Study well the needs of the family, market, soil, climate, etc., and order early.

Books.—There are excellent books on fruit-growing in which all the details of the work are given by successful men, and now is a good time to look up these points and profit by the experience of others. Such works give lists of the varieties, with descriptions, that aid greatly in making the selection of sorts, as well as directions for cultivation.

Insects must be looked after. The clusters of eggs of the tent caterpillar may be easily seen on the twigs on a dull day; they form a ring half an inch or more wide. The canker-worms come out of the ground in early spring—sometimes during this month, and ascend the trees to lay their eggs. The females are wingless, and may be kept from the trees by putting bands of tarred paper—coarse brown paper smeared with tar or with printer's ink—closely around the trunks of the tress. Put on these bands before any signs of the moth appear.

Mice and Rabbits may do mischief, especially after heavy snows, and trees should be guarded against their gnawing teeth. For mice, tramp the snow down closely around the trees, that they may not be able to work under it. Smear the trunk with blood to drive away the rabbits.

Hot-beds will now be needed in the Southern States. As a general rule these forcing pits should be started about six weeks before the time to set the plants in the open ground. The heating material is stable-manure that has become warm in the pile. If there is not sufficient litter in the mass, leaves may be added to modify the violence of the heat. When the manure has been turned two or three times in the pile it is ready for use. The manure may be either placed in a pit or on the surface. In making a pit, excavate the earth two feet deep, as wide as the sashes, and line the sides of the pit with rough boards which extend above ground a few inches in front and a foot at the rear. Strips are nailed across from front to rear, where the sashes come together. The sashes are usually three by six feet, and may be bought at any sash factory. Select for the hot-bed a dry place, that is sheltered from the north by a fence, building, or screen. Place six inches of leaves or litter in the bottom of the pit, followed by a layer of manure well beaten down. When the pit is full, tramp the manure down evenly, and put on a thick layer of earth. This earth should be rich and fine. Good garden soil mixed with fine manure, and sand enough to make it open is best. When the beds are made above ground, much the same arrangement of material is needed, only they are built up from the surface and to the hight of about three feet. A compromise between the two hot-beds is frequently adopted. A strong heat will soon rise after the bed is made. After this has passed off the seeds may be sown in rows four inches apart. Some gardeners use boxes of earth for the seeds, which are placed in the beds. The young plants need watching. Remove all weeds, and water freely; air and shade the plants, as the daily needs demand.

The Fruit Garden.

Supports for blackberries, raspberries, and grape vines, may be made in the winter and kept in readiness. For blackberries, stakes about six feet high are needed, A wire trellis is made by setting a stout post at each end of the row, with a strong wire running between, to which the vines are tied. The same kind of support, with the wire placed lower, is well suited for rows of raspberries. Wire may be used for supporting grape vines. The posts are to be set 8 to 10 feet apart, with a strip nailed on near the ground, and another at the top; the wires pass perpendicularly between the two horizontal strips. The arms of the vines are fastened to the lower cross-piece, and the young shoots are raised up along the wires. The supports used for the fruit garden should be made ready in advance, and if painted beforehand, much time is saved.

Selecting Fruits, Trees, etc.—That which has been said on this subject under the "Orchard and Garden," applies with equal force here. Select with care, and order early of the most trustworthy dealers. There are new sorts each year, and the only safe way is to buy only a few of these, and rely upon well-tested varieties for the bulk of the order.

Pruning that was omitted last fall should be attended to now, or as soon as the weather will permit. Grape vines need to be pruned long before the buds begin to swell. The currant and gooseberry bushes start growing early, and should be pruned before they begin to grow.

Manure.—The soil of the fruit garden should be rich, and manure, ashes, and fertilizers need to be applied freely, when most convenient.

Flower Garden and Lawn.

There is but little out-of-door work in this department during winter. When heavy snows come, as they frequently do in February, the snow needs to be removed from the evergreen trees. This should be done while the snow is fresh, before it bends and breaks the limbs, or becomes frozen on them. Make all the plans for drives, walks, and flower-beds, and if these are at all extensive, it is well to have a chart drawn up to follow when the out-door work begins. If manure has not been applied as a top-dressing to the lawn, it may be put on now. It should be well rotted, and free from any seeds of weeds. The seeds for the flower-beds should be selected, and those for early growth may be started in the window boxes.

Greenhouse and Window Plants.

The plants of the window and greenhouse are most appreciated during this month, and previous care should be giving its best returns. Bulbs of hyacinths, narcissus, etc., are now brought from the cellar and forced into bloom. It is time to make the necessary preparations of boxes, sand, etc., that will soon be needed for the cuttings of verbenas, geraniums, etc.

Water and Ventilation.—The plants should have water as they need it. There should be an abundance of fresh air, and at the same time any undue exposure must be avoided. The sashes left open for a half hour may so chill the plants as to injure them seriously.

Insects.—The green fly is killed by tobacco water; thorough washing destroys the red spider. The mealy bugs are best treated by hand picking or by using a pointed stick to remove them. Worms in pots are removed by turning out the ball of earth, when the worms may be found and picked out.

How Good Country Roads Pay.

Very few persons take a correct view of the actual profit to farmers of good roads, or of how much they can afford to pay for them. Our daily telegrams from the West supply one hint. All along in autumn, and not unfrequently during the winter, we can read between the lines of these dispatches that business is active, the markets brisk, everybody cheerful and hopeful in all departments of trade, manufactures, agriculture, etc., or the reverse of all this, according to the state of the country roads generally. It is a fact that in some years, for months together, the whole traffic of the country, and the activity and prosperity of all classes, are largely diminished, and the losses incurred amount to very many millions of dollars, because the condition of the roads stops general intercourse, and practically prevents the marketing of grain and other crops at the proper season.

Another view. Take, for illustration, say the 700,000 farms in Illinois, Iowa, and Indiana. Suppose that, on the average, from one-half of them there are ten loads of grain and other products to be hauled to market, and of fuel to be brought back, a distance of ten miles on the average—we include only half the farms. Call the cost per load only $2 for man, team, and wear of vehicles, when the wagoning is good. If the prairie and other roads are soft, wet, and miry, only half a load can be taken—often the team can barely draw the empty wagon. If from the condition of the roads the number of loads must be doubled, the aggregate increased cost amounts to $7,000,000—or enough to make fourteen thousand miles of good roads at an outlay of $500 on each mile.

Another illustration. Take a township of the regular size, six miles square. A road along each section, or square mile, east and west, or north and south, would require 36 miles. Suppose the town voted to expend $200 per mile on these roads, and that this sum would make them fairly available at all seasons. This, if paid down, would amount to $7,200, or 31½ cents per acre for the township. Will any one question that with good roads, available at all seasons for marketing and bringing home fuel, for town and church going and other travel, all the land in the region would be worth on the average at least one dollar an acre more, or three times the assessment? On a farm of 100 acres, the tax would be $31.25—not a third of the cost of an extra horse, to say nothing of his keeping. In fact, would it not pay well to expend $600 per mile on all the leading roads, amounting to $1 an acre? The annual interest on this would be but $6 or $7 for each 100-acre farm, and who would not pay that to have good roads always?

An Early Crop of Peas.

There are two distinct classes of peas, those with small round seeds, and others with much larger, irregularly shaped peas, the surface of which is wrinkled. The wrinkled seeded, or marrow peas, are as much better than the others as sweet corn is superior to field corn. The round peas, while not so good, are much hardier and earlier than the others. Unless the soil is warm, and they germinate quickly, wrinkled peas will decay before they can come up. The round peas are vastly better than no peas, and are very acceptable until the others come. To have early peas, they must be sown early—the earlier the better. After the soil has thawed for the first four inches, even if it is solid below, sow peas. If the ground was manured and plowed last autumn, all the better; if not, select the richest available spot, and open a drill four inches deep. Peas should be covered deeper than most other seeds. For varieties, the "Early Kent" is one of the best; it has almost as many names as there are dealers. "Daniel O'Rourke" is one of the names of a good strain of this pea. "Carter's First Crop" is another good variety, and every spring new extra early sorts are sent from England, which usually turn out to be the old "Early Kent," with a new name. The peas should be sown in the bottom of the drill rather thickly, at least one every inch, and at first covered with about an inch of soil. It is well to put about four inches of coarse stable manure over the rows; this is to be left on in cold days, but when it is sunny and warm, pull it off with the rake, and let the sun strike the soil over the peas, replacing it at night. When the peas sprout, gradually cover them with fine warm soil, placing the coarse manure over them as needed, until the covering of soil reaches the level of the surface. If a ridge of soil, a few inches higher than the peas, be drawn up on each side of the row, it will greatly protect them from cold winds. When the plants are a few inches high, draw some fine soil up to them, and stick in the brush. When the soil becomes dry and warm, the main crop of wrinkled peas may be sown.

Every One Can Graft.

Our first successful grafting was done at the age of nine years. "At home" we had an old orchard that seemed to be past its period of usefulness, and what apples it did bear were of inferior sorts. It was a question whether to cut down the trees, or try and rejuvenate them by the application of an abundance of manure, well stirred into the soil, and by grafting the old limbs with new and superior varieties of fruit. It was concluded to see what virtue there was in manure and cions, and this gave us an opportunity to watch the process of grafting. Before the job was finished we had learned the art of cutting a cion, making a cleft, applying the wax, etc. Later in the season it was a source of much gratification to see the young grafts we had put in, growing along with those set by a master-hand.

This reminiscence of youth is given as a proof that grafting is not a monopoly of gifted minds, or an art that can only be acquired by the few. With the ordinary amount of "gumption" to begin with, followed by careful teaching for only a short time, almost any one can graft successfully. Grafting is simply planting a cutting of one variety in the wood of another, instead of in the soil. It is essential that the growing layer of the cion and stock come in close contact, and be so held until they grow together. Now is the time to get the cions. They may be bought at most nurseries, and great care should be taken to get only the best varieties. If cut at home, be equally careful to get them of the right kind, cutting only twigs of last season's growth. Each sort should be cut separately and tied in bundles, labelled, and afterwards put in boxes with damp sawdust or moss, and kept in a cool place until used. A fine saw, two good knives, one strong and heavy, the other smaller, with a keen edge; a hard-wood wedge, six inches long and half an inch thick, and a small mallet are the implements used in grafting. The wax may be easily made by melting together, beeswax 6 oz., rosin and tallow 4 oz. each, over a moderate fire, stirring gradually until all is melted. Rolls of waxed cloth may be formed from old cotton stuff made thin by wear, and torn into strips two inches wide. Wind the strips upon a stick and dip them into the melted wax; when the cloth is thoroughly penetrated by the wax, remove, let drip, and put away from dust ready for use.

Grafting should be done as soon as the buds begin to swell. Having determined upon the place for the graft, saw off the branch, smooth the cut surface and make a cleft with the knife and mallet. Cut the cion from the twig, leaving two or three buds upon the piece, and sharpen the lower end into a wedge. Open the cleft with the knife and place the cion in carefully so that the lower bud comes at the top of the cleft. The inner bark, or growing layer, of the cion and the stock should touch as much as possible. If the grafted branch is small, a single cion is enough, otherwise, put in one on each side. Unroll enough waxed cloth to cover the wound of both stock and cions, and press it on carefully and closely. The quick application of this protection is only a matter of practice. It is well for beginners to start with worthless limbs before doing regular grafting in the orchard. If possible find some one in the neighborhood familiar with the process and learn the art from him. The general principles may be obtained from printed directions, but the success of the work will depend upon the knack, and that is only acquired in the orchard.

Be Ready Early.

A season of activity is near at hand. Spring is coming, with its pressing work. Are farmers ready for sowing and planting? Every implement should be provided beforehand, that no time may be wasted in making purchases or repairs after the work should begin. We have known a half-day of plowing to be lost because the whiffletrees were not at hand. Some farmers start out with their spring plowing without a single plow point in stock, and when one is needed, the team is taken from the field and driven to the store. Such a loss of time is a serious matter, and should be thoughtfully guarded against by ample provision of all such articles of the farm. It is a poor time to mend a harrow when it should be at work in the field.

We do not favor that economy—if it may be so called—that relies upon the neighbors for many of the tools of the farm. There are certain farm implements that may be owned in partnership, as a roller or reaper, but the constant borrowing of rakes, forks, etc., is not a wise and economical practice. Be provided with all these essential farm tools, and have them in good order, and at hand when the time arrives for using them.

Now is the time to look to these matters, and make all needed preparations for the busy days that will soon be here. In the peace of winter prepare for the war of spring.

American Pork Most Healthful.—If Germany wishes to "protect" her swine industry by shutting out cheaper pork from this country, and compelling the great consuming class to pay much higher prices for the home product, it should be done "on the square," just as our protectionists openly proclaim their object. It is very unfriendly and unjust to exclude American pork on the plea that it is dangerous, and thus discredit it in other countries. The truth is, nearly, or quite all American hog products exported are produced from good sound corn, and are much freer from danger of trichina and other diseases than if from swine kept in close quarters, and fed on slops, kitchen refuse, and decayed stuff that other animals will not consume, as is the case with a large percentage of those grown in Europe.

Sorghum and its Prospects.

Having been instrumental in the early introduction and distribution of the seeds of Sorghum to the farmers of this country, the *American Agriculturist* has watched the progress of the culture with no little interest. At times the value of Sorghum has been over-estimated, and it failed to meet extravagant expectations. Again, there have been seasons of depression, when its cultivation was almost entirely abandoned. A few have looked upon the plant as of too much importance to be given up; these have availed themselves of every favoring circumstance, such as new varieties and improved methods of culture and manufacture, and have met in convention to help one another by reporting their experience, and for the mutual encouragement that comes from associated action. The annual meeting of the Mississippi Valley Cane-growers was held at St. Louis, in December last, and was attended by representatives from fourteen States; from New York and New Jersey at the East, to Kansas and Louisiana at the West and South. From the reports sent us by our correspondent, it appears that the members found much to encourage them in the experience of the past year, and that as the growing and manufacture of Sorghum are better understood, the greater is its value to our agriculture. The specimens exhibited at the convention included 30 samples of sugar, 15 of melado, 90 samples of syrup, 40 of seed-heads, 6 of threshed seed, and one of cane-seed flour—all the specimens showing a great improvement over those presented at the former meeting.

In all manufactures the utilization of the waste, or "by-products" contributes largely to profit, and Sorghum is no exception. Discussion on this point showed that the *begasse*, or the refuse cane after it has been pressed, might in some localities be most profitably used for fuel, while in others, it may be converted into a valuable paper stock. It may also be used directly as a fertilizer, and thus return to the soil nearly all that the cane took from it. Or it may be fed to stock, and returned to the land indirectly. The skimmings removed in evaporating the juice to make syrup, are saved and converted into vinegar. One member reported having made 6,000 gallons of vinegar from the skimmings of 7,268 gallons of syrup. The seeds, produced far in excess of the demand for planting, may be made another source of income; from two and a half to four bushels of seed are grown with each ton of cane, and it is found to have a feeding value scarcely inferior to that of corn.

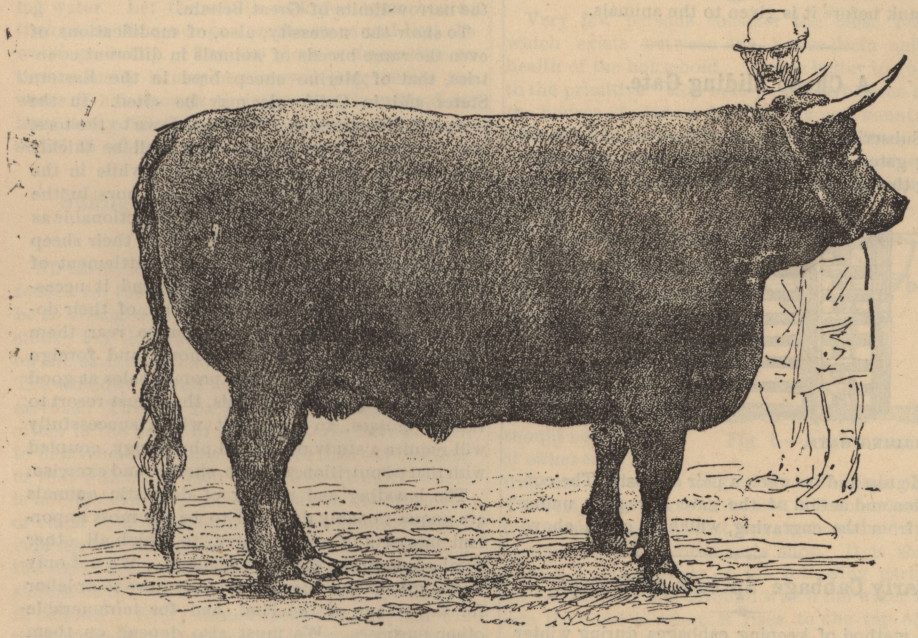
The fact is well established that some varieties, especially the "Amber" and the "Orange," will yield a large amount of crystallizable cane sugar, and that the cane contains the largest percentage of sugar at the time the seeds are ripe. It is found that after the cane is cut, the cane sugar in the juice rapidly changes to grape sugar, and that the cane should be worked up within a few hours after cutting it. The making of sugar, on account of the expense of machinery and the skilled labor required, can not be profitably followed by individuals. There needs to be coöperation among farmers to establish and operate sugar works on the same plan that cheese factories are carried on, or they may agree to cultivate a certain number of acres in cane, provided capitalists will establish factories to work it up. In several Western States companies have erected factories and cultivated their own cane on a large scale. These have generally been reported as financially successful.

Syrup can be made by the farmer who grows the cane, for home use, or for sale. By the use of the best apparatus, and by care at every step, a syrup of excellent quality may be produced, vastly better than that formerly made. The different varieties of Sorghum reach maturity in from 92 to 132 days; wherever there is good corn land, and a good corn-growing season of the above length, the cane can be successfully cultivated. As the time for planting Sorghum is about the same as for corn, we defer our remarks on its cultivation.

Devon Cattle.

In these days when the fashion among breeders of neat cattle, especially among those who are willing to lavish much money upon the objects of their fancy, tends either to exalt the peculiarly butter-breeds like the Channel Island cattle, or great beef and milk-producing breeds, like the Shorthorns or Fresians, the Devon gets only an occasional good word from some old-time friend, or a passing notice in a patronizing way, from others.

The fact is, the Devon is a breed of superlative excellencies, but is not large. This, we may say, is its only fault, and to characterize as a fault a point upon which some of the chief merits of the breed depend, seems inconsistent. We speak of the "Little Devon," rather as a pet term, as we use diminutives in other cases, than as one of depreciation. They are indeed small cattle as compared with some others, but judged by quality and profit, rather than by mere size, they take the first rank.



A PRIZE DEVON STEER.—*Engraved for the American Agriculturist.*

One who sees a herd of Devons for the first time is struck with their extraordinary beauty and uniformity, and sees at once that they differ from every other breed, or stock of cattle with which he is acquainted. They are of a brilliant, rich mahogany red, without white upon the body, but with white switches to their tails, and frequently with white udders. Though heavy in carcass they are light-limbed and the older cows low-set. Their heads are small and clean-cut, elegantly placed and carried high, while they are adorned with long, light, tapering white horns, curving upward and outward. Their throats are clean; withers thin; necks free from dewlaps; chests very wide, and briskets projecting and hung low. In girth they are large for their hight; very thick through the heart, and unequalled in the crops, which point carries the fullness of the shoulders back to the ribs without perceptible depression. The backs are very level from the withers to the setting of the tails, which are long and delicately tapered. The loins are wide and muscular; the hips wide apart, the back long to the rump, while the thighs are long to the hocks, and in the twist well let down, yet in the lower parts they are thin, giving room between them for capacious udders. The soft flanks are usually very low, giving the barrels a cylindrical, level look upon the under line. Devons are commonly heavily coated, and the hair is wavy, if not positively curly, in many cases. The skin is plastic and mellow under the touch, even when the animal is in low condition, but when in good order it is typically fine, not thin and papery, but elastic and yielding under the pressure of the finger tips, and offering a mobile, unctuous handful if grasped over the ribs. The skin color varies, but not a few show a rich cream color, inclining to orange under the fore-arm, and in the ears. Add to this description that the legs are short, small-boned and clean, that the whole carriage and style are elastic and graceful, with a promptness and energy rarely seen in neat cattle, while the large, lively yet placid and fearless eye indicates at once intelligence, confidence and repose, and we have a picture of a high-bred, beautiful and useful race of cattle, such as has no equal anywhere. The oxen are much trained, very quick in their movements, fast walkers and untiring workers. The cows are deep milkers.

The Devons for Beef.

The quality of Devon beef is hardly surpassed even by that of the half-wild Mountain breeds of Wales and the Scottish Highlands. It is the best beef we ever see in our markets, if well fattened, being thick over the choice parts, and having the fat marbled and interlarded with the lean in the most approved way. In the native breed of the Devon hills we have one of those remarkable cases sometimes found of a race formed as it were by nature—really, under the influence of the climate of the hills, the grasses and the waters, modified somewhat by both wild and civilized man, but remaining little changed by all recently operating causes within the historic period. This fact gives to the breed remarkable prepotency, little tendency to change, and when changed by the intermixture of other blood (as no doubt often occurred before the days of careful breeding), the power to throw off the introduced peculiarities, and revert to the primitive type, which has thus been preserved in its original excellence. Nevertheless its good qualities have no doubt been and will continue to be strengthened and perhaps improved by high breeding as time goes on. The cattle of South Devon and Sussex, which are similar and of a lighter red, were early introduced into New England, but were subsequently largely crossed by the high-bred North Devons, which have largely imparted their characteristics to them. When crossed with other breeds the peculiarities of the Devon are almost always dominant in the offspring. Thus many of the grade steers, while they are of a great size, appear, "handle," and cut up like Devons and hence the "Connecticut red cattle" are great favorites in our markets and always command, other things being equal, the highest prices. To show the perfection to which the Devon steer may be brought, we re-produce frem the English "Agricultural Gazette" a portrait of the one which brought the first prize as Champion of the Devon Classes in the show of the Smithfield Club, at Islington, England, early in December last.

Bee Notes for February.

During this month, there is but little pressing work for the bee-keeper. Bees that are packed either in chaff or in chaff hives need no other attention or care than simply to see that the entrance to the hive does not become sealed with snow or ice. It is sometimes well, also, to drag out the dead bees by use of a wire or slender twig.

If the bees in the cellar keep quiet, they should be left entirely alone. If they seem noisy and restless, the temperature of the cellar should be looked after to see that it is not above the safety limit: from 35° to 40° F. Often, by bringing the temperature to the proper point, all uneasiness is checked. If still disturbed, then on the first day that is warm enough for the bees to fly, they should be carried out from the cellar and placed on their summer stands, and permitted to indulge in a cleansing flight. At night return them to the cellar.

Wintering in Relation to Dampness.

An examination of the condition of the atmosphere as to the point of saturation, from accurate records taken three times daily, for the past twenty years, shows that there is not the least evidence in favor of the idea that excessive moisture was in any single case the cause of the great losses of bees. It also appears that in all the seasons of bad wintering, severe cold was experienced. It is further shown that when the cold occurred early in the winter, the mortality commenced at an early period. If late, the bees did not appear diseased until near the end of winter.

The past summer, one of our colonies was weighed each day to show the gain or loss in honey. The colony did not swarm, and made about 125 pounds of honey during the season. The greatest gain in a single day was eight pounds, during the bass-wood season. During the autumn bloom, five pounds daily were stored for several successive days. Observation shows a very close agreement between the rise in temperature and the increase of honey.

Marketable Honey.

Of late years, the tendency among bee-keepers has been to neglect comb-honey, and work almost exclusively for extracted. The latter is more rapidly secured, and it requires less skill to succeed in obtaining a good return in extracted honey. The experience of practical men, however, may well induce bee-keepers to consider the advisability of working for comb-honey. This always, if properly secured, finds ready sale at the highest prices.

One man in Illinois, with 174 colonies by the spring count, and 206 in the fall, secured over 16,000 pounds of honey, which sold for $3,000.

At present, the market demands honey in sections. Even the so-called prize section, which is 5½ by 6½ inches, is found too large, and our wide-awake apiarists have used generally the one-pound section, which is 4½ inches square. This season, the experience in the Boston and Chicago markets shows that even a smaller—a half-pound section—is to take the lead. It will be advisable for bee-keepers to arrange to secure this year's honey, in part at least, in sections of this smaller size.

Tin or wooden separators, which have been used between the sections to secure straight combs, that could be shipped easily, are expensive. Some of our best apiarists find their use unnecessary. The secret of this seems to rest with the depth of the section. The usual depth has been two inches. By making the sections from 1⅜ to 1¾ inch deep, so that the comb shall not be so thick, the even combs are secured without separators, especially if use is made of comb foundation.

In arranging to change the form of sections, if any thus decide, let it be remembered that the square form is not essential. Even the prize section is not square. Many contend that a rectangular section, longer up and down, is worked in better by the bees, and more quickly capped over, and filled to the edge, than is one that is square. It is worth while to think of this as we plan for the next harvest. It is hardly necessary to say that sections cannot be too neat and clean.

Preparing the Ground for a Lawn.

The success of a lawn depends upon a vast deal of work that is quite out of sight. We expect more of the soil devoted to the lawn than we do of any other part of the grounds, for we are continually cropping it, and it can only give a constant succession of grass when the roots have a deep soil and sufficient nourishment. As it is desirable to have the grass well established before hot weather comes, the seed must be sown early, and to this end the soil must be prepared as early as the season will allow. Only small areas, such as fruit yards, croquet and tennis grounds, should be perfectly level. A slightly undulating surface is more pleasing to the eye than a dead level, and it may be made to give the impression of a greater extent if the surface is laid out in gentle swells, and will give a better effect if slightly higher as it approaches the house. Of course there must be nothing like abrupt hills and hollows, and if any such occur where the lawn is to be, they must be either cut down or filled in. If the lawn is such that it would require draining to fit it for garden crops, then it will need draining for a lawn. Indeed, all but very light sandy soils will be improved by draining with tiles. The depth and distance apart of the drains should be such as are found best in the fields of the vicinity. The next requisite is a deeply worked soil. In England the soil is thoroughly trenched two spades deep, but we can hardly expect our people, who avoid the use of the spade wherever possible, to trench the ground for a lawn. The most we can hope for is the deepest practicable plowing, with the use of the subsoil plow. If the soil is poor, a generous coating of manure should be turned under, but if in fair condition, top-dressings may be depended upon for fertilizing. After this preliminary work, the ground should remain as long as possible before sowing, in order that it may properly settle. If in any place the ground settles unevenly, then fresh soil must be added, where needed, to bring the low spots up to the proper level. Whether the lawn is to be laid down with seed, or as is sometimes preferable, if the area is small, with turf, the preliminary preparation must be equally thorough, if a fine and permanent turf is desired.

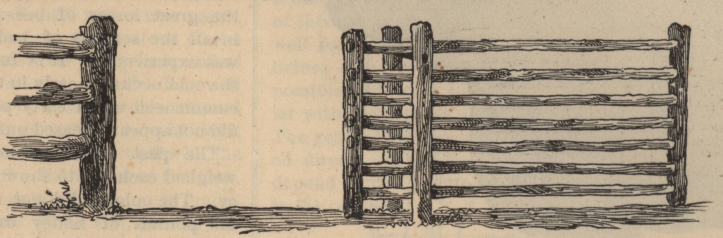
Silk-worms—Their Food.

Some of the inquirers as to where the eggs of the silk-worm can be procured, add the question, "What is best to feed the worms on?" This shows that the matter has not been properly considered, and that the writers are not prepared to undertake the raising of silk. Practically, the food of silk-worms is reduced to the White Mulberry and the related Osage Orange. Unless one has established Mulberry trees or Osage Orange hedges, the first step is to provide a food supply. As the Mulberry must be well established before its leaves can be gathered, the first step for those who would undertake raising silk-worms, should be to set out the trees the coming spring, and postpone buying the eggs until next year, when there will be something on which to feed the worms. The common White Mulberry has several varieties, for some of which superiority is claimed. Trees may be had of the nurseries, or they may be raised from cuttings or from the seed. Perhaps the cheapest method of getting a stock of trees, is to set out cuttings about six inches long, three or four inches apart, in well-prepared soil, leaving but one bud above the surface. The preliminary step in silk culture is, not to procure eggs, but to provide food.

Water Questions.—"M. Z.," Montgomery Co., Ohio, writes us that coal-tar leaked from a barrel, and found its way into the well in the horse-stable. At first, the horses refused the water, but now they seem to relish it. He asks: "Is there any remedy?" As this occurred last summer, any evil results would have manifested themselves at first. It is quite likely that by this time all the soluble matters have been dissolved out, and the coal-tar is now an inert mass with no further effect on the water. The case does not seem to call for any action.... There is an abundant spring near his stable, but the water has an inky taste, and there is a rusty deposit after it has stood awhile. M. Z. asks if the water is good for animals?—If the water has a marked "inky taste" we should not like to use it. It is likely that if exposed to the air for a while, the iron would be changed to an insoluble form, being converted into the oxide which forms iron-rust. If, after standing, the taste disappears, then the water may be used, provided it can be exposed in an open tank before it is given to the animals.

A Cheap Sliding Gate.

"A Subscriber" sends a sketch of an easily made sliding gate. The upper of the seven bars composing the gate slides upon a cross-piece fastened near the top and between a pair of posts. The construction and action of the gate is readily understood from the engraving, which is given above.



A SLIDING GATE.

Early Cabbage Sprouts or Greens.

The method of keeping cabbages during winter by laying them down and covering the heads with earth, is effective and easy. It has the disadvantage that the stumps, being exposed to the weather, are killed. Many will regard this as a small loss, but those who are fond of cabbage greens will regret it. It is one of the advantages of keeping cabbages in trenches where they are set upright, that the stumps come out sound in the spring. Where late cabbages are marketed from the field, the heads are cut off and the stems are left. Some gather up a quantity of these and keep them over winter in a pit or trench as roots are kept. In early spring, as soon as the frost is out, the stalks are set out about a foot apart, placing them down into the soil for about half their length. Sprouts will soon start from the buds at the upper part, and are cut for use when they are about two inches long, or while they are yet tender. After the first cutting other buds will start and each stump will afford several cuttings. Since the introduction of kale, or German greens, or sprouts, cabbage greens are not grown as much as formerly.

Improvement of our Domestic Animals.

For a century or more past, and particularly since the year 1817, so many superior animals have been imported into the United States from different countries, that we can now say that we possess a good and highly liberal foundation stock for a rapid increase, and also for keeping it up pure and unalloyed. But what is more important, perhaps, to farmers in general, is, that they will be able, henceforth, to obtain, at a moderate price, a grade stock which for all ordinary purposes is just as good, and possibly in some instances better, than the thorough-bred. We see an example of this in the late Live Stock Show at Chicago, in grade fat cattle, sheep and pigs; and also throughout the country in dairy herds.

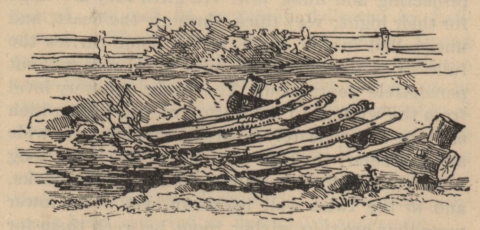
The climate and herbage of different districts vary so greatly, even in the same country, that different breeds, or at least modifications of them, are absolutely requisite to a successful production and rearing of domestic animals. This is particularly the case in Great Britain. Here we find, on partially barren hills and mountains, rising abruptly from the bordering fertile lowlands, hardy, thrifty animals growing up to maturity, on the coarse, scanty herbage they painfully find in these lofty regions. If the animals bred on the rich lowlands were placed there, instead of thriving, they would soon starve. In some districts, the selection of breeds of animals depends upon the elevation above the sea, the choice varying with about every 500 feet of altitude. We are now rapidly stocking the vast Rocky Mountain region, and, to do so successfully, it will be necessary to adopt, on a large scale, the same course which has been pursued in the narrow limits of Great Britain.

To show the necessity, also, of modifications of even the same breeds of animals in different countries, that of Merino sheep bred in the Eastern States and in California may be cited. In the former it is insisted that the legs, down to the toes, and the head, down to the nose, shall be thickly covered with wool, as on the body; while in the latter, on account of the prickles and burs in the pastures, wool on these parts is so objectionable as to compel the flock masters to breed their sheep with naked heads and legs. As the settlement of the country advances, breeders will find it necessary to make changes in the character of their domestic animals, not only in order to rear them profitably, but also to suit the home and foreign markets, and thereby ensure prompt sales at good prices. To accomplish all this, they must resort to various crosses, to carry out which successfully will require a study of animal physiology, coupled with that of nutrition, climate, shelter, and exercise.

The breeding and rearing of domestic animals are unquestionably destined to be the most important interests of our country, to which all other rural productions will be subsidiary. We not only want these animals for food, but require their labor for the tillage of the land, and for innumerable other purposes. We must also depend on them for much of the means of fertilizing our soils. Farms are being rapidly exhausted by the production of wheat, corn, and cotton, and their shipment to foreign countries. A great waste is going on, which ought to be curtailed, that the means of keeping good the fertility of our soil, of which we are now deprived, might be left to us.

A Stream Fence.

"A Subscriber" sends us a drawing and description of a "water gap," used by many in the Western States. He writes: "We place a good strong post on each side of the creek, 3 or 4 feet deep, then lay a log 12 or 16 inches in diameter across, fastening it to these posts on the upper side with spikes, or long bolts; the log must not be more than 20 inches from low water. Then take full-length rails, sharpen one end, and about 6 or 7 feet above the log drive them in the bed of the creek, one foot apart, in a slanting direction, so that the other end can be spiked on this log. The rails should extend beyond the log about a foot. The brush, etc., coming down will wash over, and disturb nothing. The "trick" of making them is, not to get the log more than 20 inches high. I know a fence of this kind that has been in use for ten years, never needing any repairs, and is as good to-day as the day it was built.



Removing Glass Stoppers.

The glass-stopper to a bottle often becomes so firmly fixed that it resists all ordinary efforts to remove it. Apothecaries, who handle such bottles daily, often acquire much skill in starting fixed corks. A sudden tap with a hard stick or a knife handle will often allow the stopper to be readily taken out. If this has been put in place while the bottle is somewhat warm, the neck will contract and hold it very fast. If the neck of the bottle be surrounded by a cloth, wet with hot water, the glass will usually expand and allow the stopper to be taken out with ease. The most difficult cases are where the liquid in the bottle is of such a kind that it may form a sort of cement between the cork and its socket. Place such a bottle stopper downwards in a sauce pan containing water. Let the whole soak for some hours; then place the sauce pan on the stove and heat the water gradually. Try the stopper from time to time; usually it may be removed long before the water is hot enough to boil. By this method we have rarely failed to remove glass corks that resisted all other means.

Sunlight in Stables.—Trap-Doors.

BY D. D. SLADE, M. D.

All barns, stables, sheds, and other buildings, intended for the shelter of domestic animals, should be so arranged as to command all the sunlight possible. For this purpose, invariably place the stalls on the eastern and southern sides of the building. The windows should be large and sufficiently numerous. There is no fear of too much sunlight, either in the house or the barn. We have no right to deprive our animals, any more than our children, of that which has been diffused so liberally. There is no objection to placing animals in the basement, or cellar of a building, if due care is taken to provide against dampness and darkness. In fact, if the stable is properly constructed, the ground floor should be the warmest in winter, and the coolest in summer. Every animal seeks the sun, and will comfort itself by basking in its rays. Let them pour freely into barns and cellars, and build yards so that while sheltered from the cold winds, they may be open to the winter's sun, from the rising until the going down of the same. Some object to the direct sunlight falling upon the head and face of the horse as injurious to the sight. It is much more to be feared that the animal will shy and start upon the road, if he is kept in darkness and then suddenly exposed to a bright light. The use of blinds, or curtains during the hot months, may, under certain circumstances, be advisable. Darkness is sometimes conducive to repose, and indirectly, this repose to the process of fattening, but with darkness, both filth and neglect are too apt to be found. The barn cellar, or basement, is not only a convenience, but often a necessity. If this is commodious, with ample means for light and ventilation, easy of access for the removal of manure, then the farmer has all that can be desired in this way. In most stables the provisions for proper ventilation are deficient, and consequently ammoniacal vapors from the fermenting manure heap, penetrate the apartments above, which are too often ill ventilated, and exert an injurious effect upon the animals there confined, and do much damage to harness and carriages. When the basement, or cellar of a barn is needed for other purposes, as for the storage of vegetables, or where it is not practicable to have a cellar, a pit may be formed at the side of the building, over which a shed may be erected. Thus, in my own stable, a pit, or outside cellar, receives the horse droppings through a sliding door, on a level with the floor of the stable, while over the pit is the cow stable, the dung from which is thrown through an opening protected by a sliding door. The pit may also serve for a pig pen, if covered and protected, and at the same time open to the sunlight and air, elements essential to the well-being of swine, as of other animals.

Trap-doors communicating with the barn cellars, through which is thrown the droppings, are in almost universal use. This common trap-door, too often placed in just such a position as to be all the more sure to catch some unoffending man or beast passing in and out of the stalls, is most dangerous to life and limb, is inconvenient, not easily raised, and almost always filthy. Better convenience may be attained by the use of a sliding-door, or by one hung on hinges, constructed in the side of a square box, which shall cover the hole through the floor, or better by one or more long narrow ones which may be placed in the lower end of the raised platform, upon which the cattle stand. These last may be lifted on their hinges, and thrown back upon the platform, while cleaning out the premises.

House Drains and "Traps."

Very few persons consider the close relation which exists between the house-drain and the health of the household. It were better to go back to the primitive "slop hole"—still to be seen about the houses of pioneer farmers in a new country, or near temporary shanties along railroad lines—than to have imperfectly laid drains, which conduct the wastes of the kitchen away from the house only to let them soak into the soil to contaminate the water of the well. The sink-drain should always be laid in cement and be water-tight. Round pipes are no doubt best, laid below frost, and there should be a "trap" at either end. These traps are to prevent the foul air from coming back. The best kind to have at the sink is the common cup tray, usually made of cast iron, and obtained at any hardware store or plumber's shop. It is shaped like fig. 1, and consists of the following parts: *a*, the perforated plate through which the water flows into the bowl *b*, where it rises to the top of the pipe *c*, while a backward flow of air is prevented by the inverted cup *d*, attached to the perforated plate by a rivet. Sand and many other solid substances will be arrested in this bowl, and by lifting the plate and cup, may be removed. Greasy water will, however, pass through and into the pipe. When this comes in contact with the cold drain, the grease will be deposited along the sides, and entangling other sediment will form obstructions difficult to remove, which, unless taken out in time, will certainly stop the flow of water. To prevent this, it is well now and then to flush the drain with hot water, and if this is not effectual, with hot ley, which will usually dissolve and remove the greasy mass. The drain should be accessible at points about thirty feet apart, where "silt basins" are placed. At these points the drain-pipe should be about the full length of a man's arm below the surface. Such a "basin" is probably best made of bricks laid in cement, leaving a chamber about a foot square, six inches lower than the end of the drain-pipe, and water-tight. The outlet pipe, also water-tight, should be set a very little higher than the inlet pipe, so that the end of the latter will always be covered with water, as shown in section in fig. 2; *a*, chamber; *b*, inlet pipe; *c*, outlet pipe; *d*, water; *e*, sediment; *f*, cement bottom.

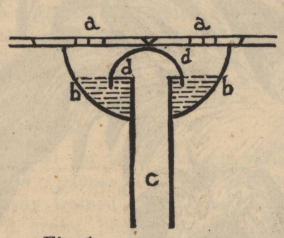


Fig. 1.—A SINK TRAP.

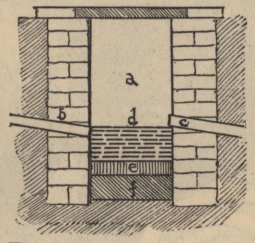


Fig. 2.—SECTION OF BASIN.

With such an arrangement in good order, no harm can come to the family from the sink-drain, for the sewage water may be carried to any distance. At the end it may enter a cess-pool, be distributed upon the surface, or led into a muck heap. Both the water and the solid matter should, if possible, be applied to the soil as a fertilizer.

Farm Lands in the "New Colorado."

BY WM E. PABOR.

The pioneering element in the West is aggressive in the extreme. In August, 1881, the Ute Indians were in possession of over 18,000 square miles of territory lying in Western Colorado, reaching from the mining region of San Juan to Utah. In September of the same year the footprints of civilization followed fast upon the retirement of the red men to other reservations further west.

The best watered portions of Colorado are in this new farming country, and in the valleys of the Gunnison, the Grand, the Dolores and their numerous tributaries. One million acres of good farming land await settlement when canals for irrigation have been constructed. Land in Colorado is of little value to the farmer unless water is assured; a quarter section (160 acres) becomes worth at least $10 per acre when an irrigating canal has been built. Water has a commercial value of $15 per acre, when in the shape of a Water Right, which is a perpetual claim upon a canal for a certain amount of water each year. When water is rented by corporations to consumers it has a yearly average value of $2 per inch, running continuously through the growing season, which amount is capable of irrigating one acre of grain land.

In this New Colorado, there is a territory twice as large as the State of Massachusetts, abounding in the precious metals and also having deposits of iron and coal of unknown extent and of varying grades; there are also within its limits vast areas of dense forests of yellow and white pine and cedar. The water supply is far beyond what can be utilized for irrigation, and in this respect this region is superior to the eastern slope of the Rocky Mountain range.

Only one-third of what is consumed in Colorado is produced there; hence high prices prevail and a ready market is always at hand. Last year two million bushels of wheat, one and a half million bushels of oats, six hundred thousand bushels of corn, seven hundred thousand bushels of potatoes, three million pounds of butter, one million pounds of cheese, and other household commodities in like proportion (in all over $12,000,000 worth of food) were shipped into the State. Only a rich State can stand such a drain upon its resources. Its yearly production of twenty-three millions of bullion tells how it is being done. The great Commonwealth in the heart of the Rocky Mountains is looking forward to a future, in which manufacturing, as well as mining, will make her an important factor in the industrial wealth of the country. When to this is added the attractions of a peculiarly healthy climate, a varying altitude of from 3,500 to 8,000 feet, the diverse products of the soil, and the never cloying mountain scenery, whose magnificence not even Switzerland can surpass, we are presented with a variety of attractions hard to be equalled by other portions of the Great West.

During the past fifteen years, the plains region of Eastern Colorado has been changed from barren prairie lands into prosperous farming communities. No large areas remain, capable of being brought into cultivation by irrigation now being so extensively practised. Public attention is being rapidly drawn to this section of our country, which, though two thousand miles from the Atlantic seaboard, and half this distance from the warm waters of the Pacific, still has direct communication with each by a railway system that brings it on the highway of travel across the Continent.

Liquid Glue.—Glue, as ordinarily made, with water, must be used hot, and when cold it becomes hard and almost solid again. Glue, that will remain liquid, and be always ready for use, is very convenient to have at hand. It is prepared by placing fragments of the best glue in a bottle, and covering them with Acetic Acid, which may be had at any drug store. The bottle is placed in a vessel of water, which is gradually heated and kept warm until the glue is dissolved.

A POULTRY SHOW.

Drawn [by E. Forbes] and Engraved for the American Agriculturist.

No. 1. BUFF COCHINS.—No. 2. WHITE BANTAMS.—No. 3. PARTRIDGE COCHINS.—No. 4. DARK BRAHMAS.—No. 5. LIGHT BRAHMAS.—No. 6. HOUDANS.—No. 7. GRAY DORKINGS.—No. 8. BLACK SPANISH.—No. 9. WHITE LEGHORNS.—No. 10. SILVER-SPANGLED HAMBURGS.—No. 11. GOLDEN-SPANGLED HAMBURGS.—No. 12. WHITE-CRESTED BLACK POLISH.—No. 13. SILVER-SPANGLED POLISH.—No. 14. BLACK-BREASTED RED GAMES.

What One Sees at a Poultry Show.

There are some sixty or more common well known varieties of barn-door fowls. In any good show these are arranged in classes, but every one practically interested in poultry should be able to classify fowls for himself at a glance. We have for instance the old standard English breeds, Games, Dorkings, Hamburgs, and Polands. The first-named, however, is by no means peculiar to England, though long bred there to feather as well as for the "pit,"—and of this there are not less than six, and probably a dozen well defined breeds. They are the most beautiful, most perfect in form, best for all uses, typically gallant, in short present a culmination of all gallinaceous perfections, and are hurt, in reputation only, by their association with a low class of men. The Dorkings are easily recognized by their heavy build and short legs, which are pink in color, and with five toes. There are properly two breeds, the Gray and White, though a very beautiful variety of the Grays is the Silver-gray — which probably gains its peculiar style and beauty from a remote Game cross. The Dorkings are bred as table fowls, the flesh being excellent, the breast full and the birds being of large size and quick growth.

The Hamburgs are small fowls with beautiful plumage, full rose combs, and clean slate-colored or dark legs. There are some five varieties, distinguished by the color and markings of their plumage. They are persistent layers of small eggs.

The Polands are fowls with heavy top-knots, quite obscuring their combs, and it is probably from these conspicuous polls that the name is derived. They also lay persistently a medium-sized egg, and rarely or never sit.

The Spanish breed has long been known to poultry breeders. It is the largest, and really the typical member of the group which consists of the Black Spanish, Minorca, Andalusian, White and Brown Leghorn, with some less well defined varieties. They are all distinguished by their large, deeply-toothed, single combs, their proud carriage, erect tails and apparently short backs. They are persistent layers of medium to large white eggs, and are valued chiefly for this quality.

The French breeds, though by no means modern, have not, until of late years, been much valued by poultry breeders of this country and England. Yet they form a most remarkable and valuable group, combining, as no other breeds do, large size, excellent flesh, with persistent laying of fine white eggs. The best known breeds are the La Fleche, Crevecœur, and Houdan. The former two black, the latter two top-knotted and muffled, the last of speckled plumage and five-toed. With this group belong the Guelder-land fowl with only rudimentary combs, and some other varieties. They are all distinguishable by having two combs, usually branching and reminding one of stag's antlers, generally accompanied by a sort of spur, like a little rhinoceros horn, between the nostrils.

In all shows of fowls now-a-days, the most conspicuous group is that of the Asiatics. This includes only very large, heavy, generally very fluffy and densely feathered fowls, without power of flight, and with small tails, and feathered legs. The Cochins form the most prominent sub-groups, and are distinguished by their enormous, low-set bodies, long necks, and single combs. There are Black, White, Buff, Cinnamon, and Partridge Cochins recognized as distinct varieties. Of the Brahmas there are two very distinct varieties, the Light and Dark. They are marked by more style and pride of carriage than the Cochins. Though not heavier, they appear larger and may be recognized by their triple combs, described as a medium-sized, or small, straight comb, with one clearly defined comb or row of teeth on each side at the base of it. The Asiatics are layers of large buff eggs, are valued as winter layers, grow rapidly, do not fly, have inferior flesh, yet are very valuable in crossing with other breeds to get size and weight for market poultry. The Malays, a breed of Asiatic game fowls, having large size, greater powers of flight, but very leggy and bony—and the newly introduced gigantic breed of Langshans, which resemble Black Cochins, and are feather-legged, should be classed with the Asiatics.

There is besides a nondescript group of oddities and hybrids—in which we are obliged to place that best of all the breeds which claim an American origin—the Plymouth Rocks, a cross between Malays and Dominiques (a breed difficult to classify), with some other good blood, long bred, tolerably pure, originating in this country.

Finally come the Bantams; a large group, classed together only on account of their small size. Among them we have a group as perfect in stature, and plumage, in courage and gallantry as those of four or five times their weight. Others are miniature Hamburgs, and Cochins, and we know not why by breeding, feeding, and careful selection of the smallest and most useless we might not produce bantams of any breed, true to the general style and feather, but mere toys—as such, pretty and interesting. Fourteen breeds of fowls are shown on the previous page.

There are half a dozen well defined varieties of Turkeys. Not less than the same number of Geese, some ten kinds of Ducks, not including the wild, half-tamed sorts. Of the sweet-voiced Pea fowl there are two sorts. And of the Guinea, also two.

Quince Culture.

BY W. W. MEECH.

The quinces cultivated for their fruit are varieties of *Pyrus Cydonia* (*Cydonia vulgaris* of the old authors). It is easily trained into a small tree, though naturally it grows bushy and produces shoots from the collar of the tree, many coming up from below the surface of the ground. With good culture, the branches grow smooth, and, though somewhat irregular, are readily trained into a symmetrical head. The bark is smooth and dark-hued, the shade varying, according to age, from a bright to a very dark-colored green.

The leaves of the different varieties differ in size, are broadly ovate, and acute at the apex. The upper surface is very smooth, and of a rich green color, the shade varying with the hue of the bark. The underside is much lighter, with a cottony lining. The leaves resemble those of the apple and pear, although they are wider in proportion to their length, and have a deeper shade of green. But they are very unlike them in adhering tenaciously to the twigs until very late in autumn.

The flowers are always on shoots of the same year's growth. Their color is a roseate or pinkish-white. The calyx is urn-shaped, and five cleft, supporting five rounded petals, protecting five styles in the midst of many stamens, that fructify the ovules in five parchment-like cells at their bases. Each cell contains two rows of seeds, imbedded in a thick mucilage that is almost transparent. The fruit is either apple or pear-shaped, and is covered with a white down that affords partial protection from insect enemies. Trees laden with ripe orange-colored fruit, in its varying shades, are highly ornamental. The acid flavor and delightful fragrance of the quince are peculiarly its own. Unlike many other fruits, it retains the color it has when gathered, and keeps hard and firm until softened by decay. Though one of the hardest of fruits, it is one of the most easily bruised, and then soon decays. If wrapped in soft paper, as oranges are, its time of keeping may be very greatly extended. May is the season for blossoming, but with vigorous trees there is often a second flowering in June, sparsely scattered among the branches. These late blossoms produce fruit that will ripen in favoring seasons.

A very different species is *Pyrus Japonica*, a low thorny shrub, which grows from six to eight feet high. It is frequently cultivated for ornament, and is commonly known as the Japan Quince. There are several varieties, differing in their colors. The one most commonly cultivated has a bright scarlet blossom in clusters, and is among the earliest flowers of spring. There is frequently a second blooming in autumn, so that we may see ripe fruit and flowers together on the same tree. The charm which is imparted by the brilliancy of the clusters of these flowers is unsurpassed.

The Blush Japan Quince only differs from this by having its flowers of a fine blush, shaded with pale pink, like apple blossoms, which affords an agreeable relief by their contrast with the scarlet. Among other varieties of this shrub is one which has a white blossom to distinguish it. A double-flowered Japan Quince has lately been introduced, which succeeds well by the ordinary methods of propagation and culture. The smooth leaves appear after the blossoms, and fall early in autumn. The fruit is shaped much like the common plum, and is not generally much larger, though it sometimes measures six inches around. The skin is rough, and of a deep green color. The flesh is hard, with a very strong quince odor, and an exceedingly acid juice. This fruit makes a fine jelly, and will impart its flavor to four times its quantity of other fruit.

Cabbages—the Seed in Place or Transplanting.

It is well known that Mr. Gregory, of Marblehead, Mass., advocates for late cabbages, the sowing of the seed in the hill, where the plants are to mature. This, to one accustomed to the usual way, seems absurd and needless. To this it may be answered, Mr. Gregory is a thoroughly practical man, and raises crops for profit. On the other hand, Dr. Oemler, a grower of long experience in Georgia, is very emphatic in his warning against Mr. Gregory's method—and now comes Mr. Green with his experience on the other side. Mr. Green passed one season with Mr. Gregory for the purpose of learning his methods in raising profitable crops of vegetables, and regards this manner of raising cabbages as one of the important points he learned. There are evidently two sides to the question.—ED. Mr. Green writes:

"In the spring the land was enriched broadcast with barn-yard manure, and plowed, and about June 9th, furrowed out at three and a half feet intervals. A small shovel of sea-weed manure, or a handful of bone dust, or other good commercial fertilizer was put in the furrows every three feet. The latter was covered two inches with soil after being well mixed, while the sea-weed was only covered, without mixing. Over the hill thus made, the flat end of the hoe was pressed, which made a firm seed bed. Following came a man with the seed. He makes a scratch a half inch deep, with his finger in the pressed part of the hill, and drops in perhaps five seeds, which he covers with moist, fine soil, and presses the sole of his shoe quite heavily over the seed. This makes the soil firm and protects it from the drying influence of the sun and wind. The number of seeds put in the hill must vary according to its quality and the condition of the soil. If the seed is plump, and not more than two years old, and to go into fine, well worked soil, five are enough for one hill, and will give many plants to spare at the thinning, besides allowing a few for the turnip fly. But if the seed is pinched, or older than two years, the number should be increased to a dozen. If the work is well done, in ten days the young plants will appear. Should the fly trouble them, and they must be carefully watched, go over the land with a bucket of plaster, and throw a little on each hill. Enough dust will stick to the plants to protect them. This plaster should be used when the plants are wet by dew or rain, and renewed every time it is washed off, until the danger is past. If the plaster is put on when the plants are dry it will answer, but not so well.

The plants are not cultivated until something over a finger high, and of course weeds grow and cover the ground and often almost hide the cabbage plants. The cultivator is then set going, and the remaining weeds are taken out by hand, and the hill thinned to a single strong plant. If a hill is vacant a plant is set in it. From this time on, the cultivation is as for any cabbage crop, which to my mind means cultivation as much with horse as is practicable, enough to keep weeds back and

the soil loose. If any plants are backward, as transplanted ones will often be, work in around them a little quick-acting fertilizer. If any are too forward, retard by pulling them enough to start the roots. Last year I planted Fotler's Improved Brunswick, and Improved American Savoy, and find, June 12th, sufficiently early, but would give a longer season for such as the Flat Dutch. I believe it is not generally known that cabbages will head without transplanting. It was an innovation in this section, and many of the practicable people prophesied its failure. Last season, more than usually dry, made it difficult to transplant successfully, and I have ten loose heads from those transplanted, to one where the seed was put in the hill. Where land is high priced, and two crops are required to make it pay, this method cannot be so easily followed, but for most farmers and gardeners, I feel confident it is the most certain and profitable."

What Might Happen.

The population of the United States has been growing at such a comfortable rate that it has doubled about once in twenty-five years, and good citizens who have fallen into the habit of regarding this as a normal growth, have come to believe that this sort of thing is to continue, and that the doubling is to go on through all time. Yet there is a limit to this growth, fortunately, and to the room in which it would disport itself. A little attention to the figures will show us that, at the present rate of progress, the population of the Union would be eight hundred millions in 1980, and sixteen hundred millions in 2005, or about the time of the next transit of Venus. The amount of smoked glass required to accommodate the eyes of the faces upturned to this phenomenon, at that remote day, would probably equal the area of some of the States. It is well to curb the aspirations of our national pride by disposing of some of these delusions of hope, and to bring our faith in the future within more reasonable limits. Prof. Proctor has undertaken the task, and he shows that in exactly 517 years, the population of the United States, progressing at the present rate, would furnish four persons to each square yard of surface for all the seven million square miles of the habitable part of North America. In 617 years, more than the entire land surface of the globe would be occupied in the same way. Prof. Proctor further shows that at the low rate of one and a half per cent increase per annum, which is about the present rate of growth in England, it would require but 1188 years to pack the earth's surface with these human sardines; yet the period named is but a mere nothing in the cycle of history. One thing is very certain, that long before this crowded condition could be developed, the earth would cease to be inhabited, either within or without the United States. One of the most comfortable considerations in the whole matter, is that those who come after us will see the problem worked out under the same code of natural laws by which the present state of things has been reached, even though that code militates against the manifest destiny aspirations of a patriotic people.

A Mule and Cattle Barn.

The building shown is intended for a mule barn, but by modification could be used for cattle or any other stock. It is 100 feet long,

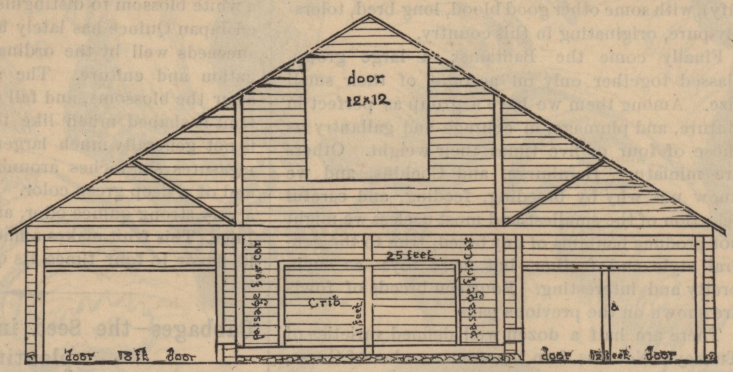


Fig. 1.—END VIEW OF A CATTLE BARN.

67 feet 6 inches wide, with a power room adjoining one end, 30 by 30 feet. The barn proper is 100 by 25 feet, on either side of which is a passage, or shed, 20 feet broad, running the entire length of the structure.

The cutting room occupies 25 by 46 feet on the first floor, the remaining 70 feet being used for the crib and passages. The crib is 70 by 17 by 8, and will hold 700 barrels of corn. On each side of the crib is a passage 3 feet wide, in which the feed-car runs, and from which the cut feed and corn is distributed to the troughs on either side. These troughs are 100 feet long, two feet broad, and one foot deep.

The passages are open through, but can be closed at the ends by double doors, which

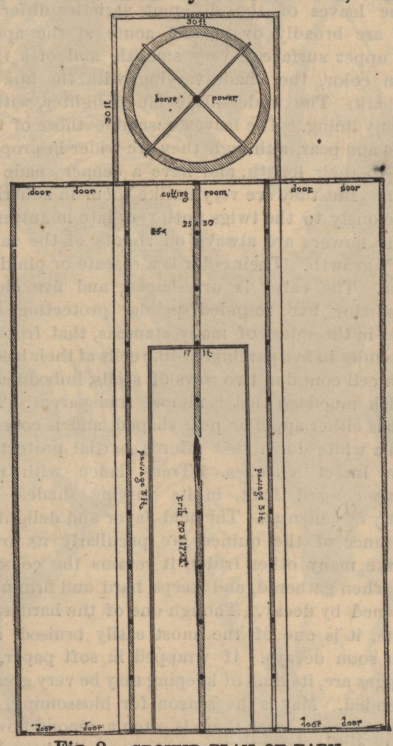


Fig. 2.—GROUND PLAN OF BARN.

shut against movable posts as seen at *a*. The plan shows the general arrangement of framing timbers. The upper story is for hay.

In the cutting room is space for a corn sheller and feed mill. This barn will accommodate 100 colts, or yearlings, or 75 adult mules. The cost was $1,500. This price will be increased or diminished in proportion as labor and material are cheap or high. JOHN GRAHAM.

Leached Wood Ashes.

Ashes fresh from the stove or furnace, contain all the mineral constituents necessary for plant growth, and are therefore very valuable as a fertilizer to a worn out or naturally poor soil. A large part of the potash is removed from ashes in leaching, and as this constituent is a leading one, leached ashes are of less value as plant food than when fresh. The owner should save, in a secure place, all the ashes made, and apply them to the land in the spring. A top-dressing of 20 bushels per acre to an old pasture or meadow will give good returns for several years. The leached ashes should be disposed of in the same manner, only they may be applied at the rate of 100 bushels per acre.

Leached ashes have been bought and used for many years by farmers and gardeners on Long Island and near the shore towns in Connecticut. These ashes are brought mainly from Canada. Ashes are specially good for tobacco land, and onion raisers find them profitable. It has been observed that where this fertilizer has been introduced, it retains its hold upon the confidence of those who use it. Fruit growers are glad to get leached ashes for their small fruit gardens, and even orchards of large trees are much benefited by them. Save all the ashes, leached or unleached, and if there is a good opportunity, buy and apply them.

How to Treat Thrush.

Thrush is a disease of the horse's hoof, quite common in this country. It results oftener from neglect in the stable than from any other cause. The symptoms are fetid odor, and morbid exudation from the frog, accompanied with softening of the same. A case recently came under our observation. A young carriage horse, used mostly on the road, and kept in the stable through the year, showed lameness in the left fore foot one morning after standing idle in the stable all the previous day. On removing the shoe, and examining the hoof, a fetid odor was observed. The stable was examined, when the sawdust used for bedding was found to be saturated with urine. The stable was cleaned immediately. Dry sawdust was placed in the stall, and a few sods packed in the space where the horse usually rested his fore feet. The lameness diminished without medical treatment, and in ten days disappeared altogether. A bedding of sawdust, or earth, covered with straw, or leaves, promotes the comfort of the horse, but it needs watching and systematic renewing. The limit of the absorbing power of the driest soil, or sawdust, is soon reached. If a horse is kept most of the time in the stable, his bedding soon becomes wet, and unfit for his use. It is all the better for the compost heap, and for the horse, to have frequent renewals of absorbents of some kind, that fermentation may not be in progress under his hoofs. The proper place for this fermentation is in the compost heap. Too often the care of the horse is left to a servant without experience in the stable, and the result is permanent disease in the hoofs and legs of the horse. This is most certainly one of the cases in which "an ounce of prevention is worth a pound of cure."

Shall We Try Market-Gardening?

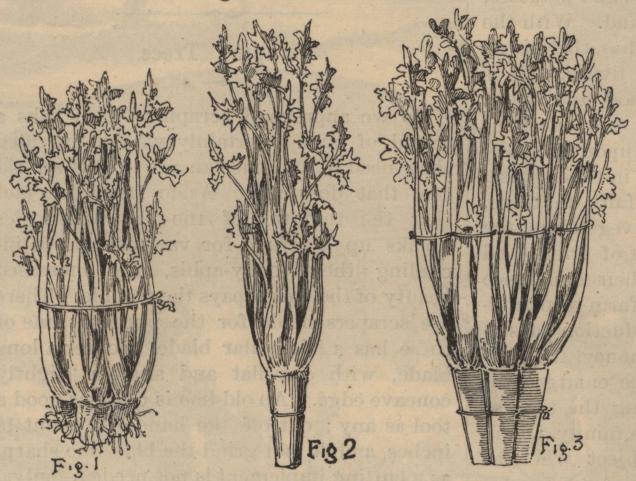
Every season furnishes its crop of unsuccessful merchants, or mechanics, who ask our agricultural editors if market-gardening does not pay large profits, and if there is not a good chance in this business for an industrious man to better his condition. Judged by the high prices the average citizen pays for his vegetables in the large cities, it seems to him there must be money in raising vegetables. If he could remove to the country, say within an hour's ride, he could attend to his city business without loss of time, and by hiring a good gardener, he could have cheaper vegetables and fruits, and add something to his income by sending the surplus to market. Nothing looks more feasible on paper; nothing is more delusive in practice. Every business, to be successful, requires a responsible head, thoroughly acquainted with all its details, and giving it his personal attention. There are many points in market-gardening that can only be learned by experience, and if a stranger to the business undertakes it, he will pay dearly for his education. Some three hundred dollars to the acre are needed as capital to carry on the business to advantage, even when a man is practically acquainted with it, and knows how and where to invest every dollar. The questions to be solved, are location in reference to market; soil, what kind and how much; what crops to grow; what kinds of manures to apply to a given crop, and the quantity; what tools are wanted; what seed to plant; what teams are needed and what labor to carry on the business successfully, and have no waste. The cultivation of a few square rods for a family supply of small fruits and vegetables, might prove profitable and healthful, while market-gardening in the same hands would prove disastrous. Market-gardening is a remunerative business when a man understands it, but it is far from being an easy road to wealth for those who have all the details to learn.

Kieffer's Hybrid Pear.

It will be recollected that this variety is probably a hybrid between the very hardy, but inedible, Chinese Sand pear, and the Bartlett. There was every opportunity for such a hybrid to be produced, and the pear itself bears strong marks of such a parentage. The Le Conte is another similar hybrid. Some experienced fruit-growers near Philadelphia think that these new hybrids will revolutionize pear culture, and have planted largely, especially of the Kieffer. Mr. William Parry writes us concerning an important point in relation to this pear, which, as it is now being widely propagated all over the country, should be generally known. While this pear, worked upon pear stock, makes a tree of remarkable health and vigor, upon quince stock it is a failure. Not only this; if buds be taken from a tree upon quince stock and worked upon pear stock, the resulting trees will fail. Mr. Parry cites an orchard of 5,000 trees, 3,000 on pear and the remainder on quince. At the end of the first year, but one tree in a thousand of those on pear stocks needed replanting. Of those on quince, one hundred trees in each thousand had to be replaced; the next year many more, and all that are left have a sickly appearance. It seems to be a well-established fact that the quince is poisonous to trees containing an admixture of the Chinese Sand pear. Those who propose to plant these hybrid trees, should stipulate that they shall be free from any contamination with quince.

The Customs of the Market.

The market-gardener, and every fruit grower for market, knows that when he has raised his crop, only half, and sometimes only the easiest half, of his work is done. The crop is to be sold. This requires skill of a different kind. If a novice in fruit culture in New Jersey, for example, should load his wagon with trays, or "drawers," each with a bushel or so of strawberries, and drive over to New York City, expecting to sell his berries by the quart, he would probably, at night, carry a large share of them back again. In some western



CELERY PACKED FOR MARKET.

cities, berries are sold in this manner, while in New York, people would not buy them. The same rule holds good with vegetables. A short time ago we saw, at a city commission house, large boxes of celery; the heads were very fine, but they were tied in round bunches, as in fig. 1. These plants came from a point in Michigan, where soil and climate are favorable to the production of superior celery. The manner in which the celery was put up made it of slow sale, and it could only be disposed of at a price much less than that of inferior celery, put up in the regular style. Celery for the New York markets is bunched in a showy manner. After the heads are washed and the outer leaves trimmed off, they are put up, according to size, three to five in a bunch. The solid root, left nearly its full length, is first cut square and slightly tapering; then a groove is cut in the root, as in fig. 2, at the same distance from the top in all. A string is placed in the groove and tied; another root is tied to the first, and a third one to that, the string passing on both sides of the root, and the last one is tied in very securely. This will cause the whole bunch to spread; the leafy portion will be fan-shaped, as in fig. 3, and is kept in form by another string across the leafy part. It will be seen that the same number of stalks, bundled as in fig. 1, will make a far less attractive appearance than when bunched as in fig. 3. A knowledge of the customs of the New York market would have been worth a handsome sum to this Michigan grower. Had his celery been put up in the proper manner, it would have sold for more than that raised near by, while it really sold for less. This may seem like a trifle, but "there is money in it."

Seasonable Proverbs.

The old English proverbs in regard to February are not altogether without significance for a considerable portion of the United States. A "fair" February was the bane of the country people, and the wisdom of many, crystallized into the wit of one, found expression in lines like these:

> "February fill the dyke,
> Either with the black or white;
> If it be white, it is the better to like."

"Black" stands for rain, and "white" for snow, and in the popular faith, February was invoked to preserve its wintry character. It was sad, indeed, if the month failed to maintain the reputation with which it was credited. In Wales, the proverb was to the effect that "the Welshman would rather see his dam on her bier" than miss a February of the old-fashioned sort. Welsh family attachments are so proverbially strong that this "wise saw" may be regarded as an exaggeration. It, however, gives expression to the intensity of feeling with which the farmer regards the possible destruction of his crops, or the failure of the promise which the season makes to him. It is only by slow and patient endeavors that the preparation for the crop is made, and then comes the period of hopeful waiting, in the calm confidence that the laws of Nature will be duly enforced, that the established regularity of the seasons will not fail, and that the harvest will prove a substantial reward both of labor and of trustfulness. It is a great struggle with drouth and storm, with heat and cold, and with the unending variety and untiring attentions of those hordes of insect life, which are, in these latter days, the plague of the vegetable world, each plant having its own peculiar torment and trial, and some of them receiving the special advances of many sorts of active bores and borers. By-and-by the proverb maker will formulate his wit and wisdom concerning insects, into terms more emphatic and more truthful than those that exist in many of the sayings of the elder days.

What Varieties of Pears to Plant.—For home use, or for market either, above all things avoid choosing too many kinds, but confine the selection to a few of the best, well-known sorts, and those which are for general cultivation. The Bartlett, as a standard, or half-standard, and the Duchesse as a dwarf, or half-standard, are the very best for general use or for market, as they are good, regular bearers, of fine, salable fruit. To these might be added the Belle Lucrative, the delicious Seckle, as a standard, the Onondaga, half standard, the Buffum, dwarf, and quite a host of others, of varying degrees of excellence or desirability. But enough varieties have already been named to supply any home plantation with fine, desirable pears, and to enlarge the list, would only add greatly to the amateur grower's confusion, and lead him to select such as would be shy bearers, not suited to his locality or needs. It is always best for the beginner to start out with a few well tried sorts.

Home Supplies of Food.

How to secure and utilize supplies for the table is the theme for discussion in city and country, and must become more important as our population increases. With our soil and climate, our rural population ought to be the best fed people in the country. This is notably not the case. The best tables are spread in our cities and villages, and the rural population, with abundant means of luxurious living, have a scanty variety of food. In the older States there has been improvement, but it falls far short of that variety and excellence which the highest vigor of body and mind demands. Even now we need not travel far from the railroad to find large districts where there is no market or butcher's cart, and the traditional "hog and hominy," or salt junk and potatoes, is the staple food the year round. With the advantages which the farmer has, there is no apology for this low scale of living. He is by profession a producer of food, and ought to advertise his business by the excellent quality of the food displayed upon his table. Cured meats are well enough in their place, but we want to add to our faith in these, the virtues of a long list of vegetables, the knowledge of a still larger list of fruits, and the temperate enjoyment of their abundance the year round. While the farm or plantation must be given to the production of staple crops for the raising of money, the garden and fruit yard should be enlarged for the express purpose of raising the tone of health and enjoyment in the family. Paul was orthodox upon this subject when he taught: "But if any provide not for his own, and specially for those of his own house, he hath denied the faith, and is worse than an infidel." There is much infidelity of this sort lurking in the shadow of our rural sanctuaries. It takes but little land to have trees and shrubs pleasant to the sight, and good for food, beyond all the reasonable wants of a family: On a single acre, well tilled and cared for, all the better sorts of fruits and vegetables adapted to the climate may be grown in sufficient abundance to give variety to the table every day in the year. Apples are good, but they may be supplemented by pears, peaches, plums, apricots, and cherries of the early and late varieties. The currant is an admirable midsummer fruit, but strawberries, raspberries, blackberries, and gooseberries are quite as easily raised. Wild grapes are better than nothing, but Concords and Delawares are very much better, and will mature good crops with very little care. Potatoes and turnips are wholesome diet, but we can add to them with profit, asparagus, lettuce, cauliflower, squashes, tomatoes, egg-plant, and a long paying list of vegetables. Ignorance of their cultivation is no apology for the absence of these fruits and vegetables about a farmer's home. It only needs a little enterprise to add largely to our home supplies of food. Now is a good time to make up a list of trees for planting, and to buy seeds.

Some very Early Potatoes.—If one cares to try how early he can get a small crop of potatoes, he should begin at once. We say "a small crop," as with Bermuda so near, we doubt if this enterprise would pay commercially. Select the seed potatoes of an early variety of moderate size, as nearly alike as possible, and stack them in a shallow box—or boxes. The potatoes should be stacked in regularly, placing the seed-end uppermost, as many as the box will hold. Set the box at a sunny window and give it all the light possible, and in a fairly warm room. Sprouts will soon appear, but instead of being long and slender, as are those formed in a shady place, they will be short, thick, and stubby. Being deprived of moisture they make but little growth, but when planted in the open ground, are ready to grow at once. They should be planted as early as seems safe. It will be well to nail boards together at right angles, like an eaves-trough, and place them along the rows; in case a frost is feared these sheds may be turned over the vines to protect them. Straw covering will answer.

Scraping Trees.

Do we approve of scraping Trees? asks a friend of ours. Certainly we do, provided they need it, and one can rarely find an old tree that does not. Aside from the fact that the removal of the old bark-scales breaks up a refuge for various insects, including the Woolly-aphis, the increased beauty of the tree repays the trouble. There are scrapers made for the purpose; one of these has a triangular blade, another a long blade, with one flat and another slightly concave edge. An old hoe is quite as good a tool as any; cut off the handle to about 18 inches, and do not grind the blade too sharp, as a cutting implement is not needed—only a scraper. On a very old trunk some force may be needed to detach the scales that are partly loose, but on young trees be careful not to wound the healthy bark. The scraping may be done now, next month, or later. When there comes a moist drizzly spell, go over the scraped bark with good soft soap, made thin enough with water to apply with a brush. Paint over a thick coat of this soap and leave the rest to the rains. Later in the season the trees will appear as if furnished with mahogany trunks.

A Wood-Rack.

Mr. R. L. Smith writes us: Hauling logs to mill is hard work, but the labor can be lessened to some extent, if the right means are employed. During the past winter we have used to our satisfaction a wood-rack on a pair of bobs. The rack should be 12 feet long, and of the right width to fit in the bolsters. (Such a rack will also fit a wagon.) It is made of 2-inch elm plank. Bolt across each end two cleats of hard-wood, one on the upper side, and one on the under, then on top of the rack, on each side, bolt a hard-wood 2 by 2½-inch scantling. If this rack is wanted for drawing cord-wood or posts, bore nine 2-inch holes on each side of the rack, 1½ inch from the side-pieces. The railing is a support for the stakes against which they lean. By boring the holes the right distance apart, one can draw three lengths of cord-wood or two of posts. The stakes should be of tough wood, and good size. A saddle, with three notches, should be fitted over each bolster on the rack.—Such racks are easily made.

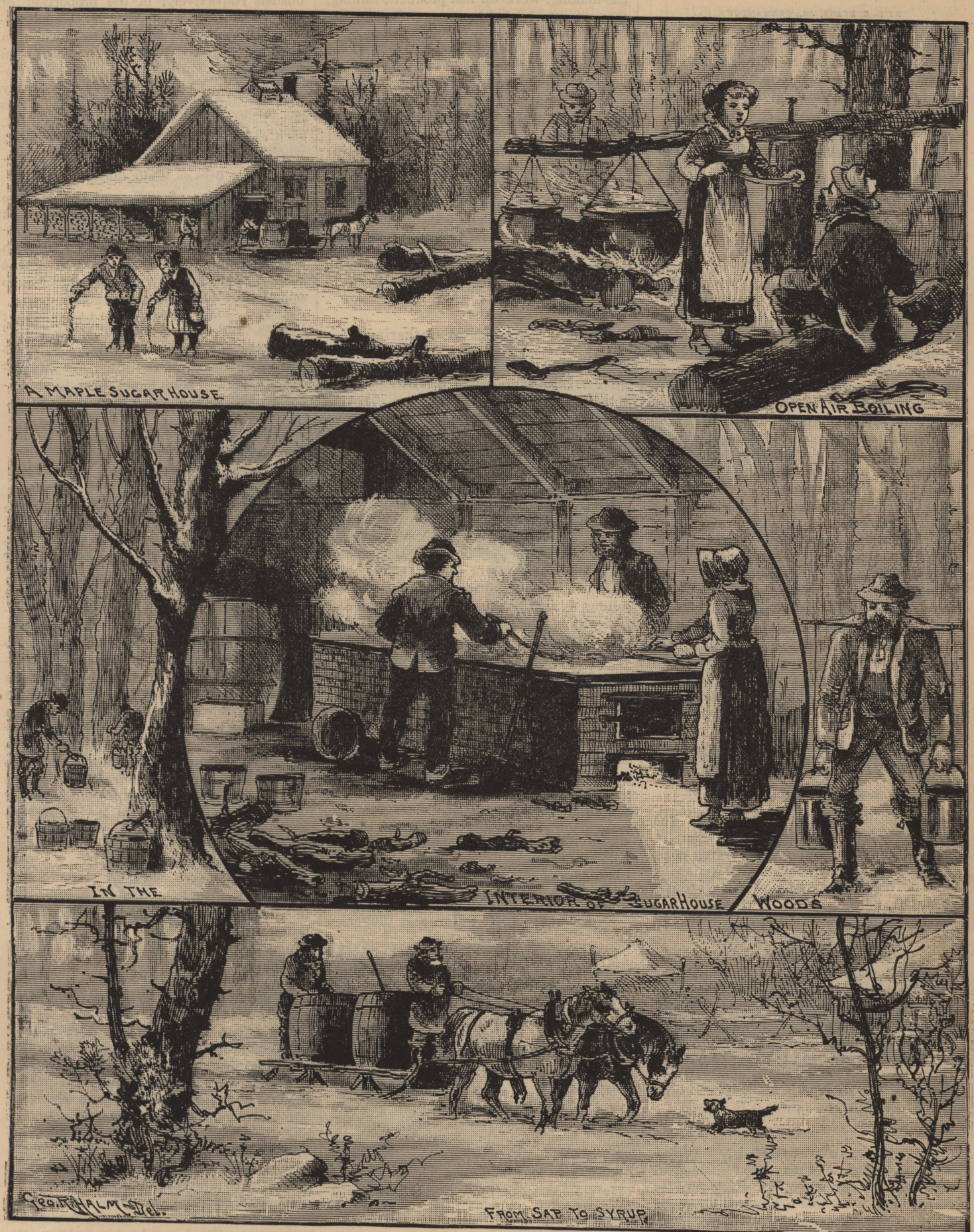
The Maple Tree and its Sugar.

Although the maple product amounts to only about two per cent of the entire consumption of sugar in this country, it is yet an important item. The recent census figures are not yet made up, but the previous census reported some thirty million pounds, of which 30 per cent was credited to Vermont; 24¼ per cent to New York; 12 to Ohio; 6 to Indiana; 2½ to the Virginias; 1⅛ to Wisconsin (since largely increased), and 1⅓ per cent to Massachusetts. This product is mainly obtained from the Sugar Maple (*Acer saccharinum*), also called the Rock Maple, which grows chiefly in the Northern and Middle States east of the Mississippi River. The sugar maple is a most valuable tree, not only for its sugar product, but as fuel it approaches hickory, and is the best of all woods for charcoal. Its hardness and frequently curled grain admirably adapt it to cabinet work. It is also a beautiful shade tree for the street border, and for some fields and lawns. A sugar maple grove adds greatly to the value of any farm, and multitudes of farmers should plant one for their own enjoyment in later years, and for their children.

Sugar making in some of its phases is shown on the page opposite. The saccharine matter is stored in the tree in the form of insoluble starch, which is changed to soluble sugar when the sap flows after the winter's frost, and is by it distributed to the twigs, and to the leaves when they develop, and to all parts of the tree where growth is to be made. The best flow of sap is on a warm day following a freezing night. Inserting a tube near the base arrests and draws off a portion of the circulating sap. This, caught in rude wooden troughs, or in pails or buckets, is boiled down sufficiently to drive off a large portion of the water. The syrup is left to cool, and the sugar crystallizes, differing from the Southern cane sugar only in its peculiarly pleasant flavor, which is almost universally liked, and gives it a ready sale.

Any boiling vessel will answer, from an iron pot, or kettle on the stove, for a small quantity, up to the immense caldron, set on stone, or brick masonry, or hung on a pole, supported by stakes, with a fire built around it on the bare ground. The improved boilers are shallow pans having a large evaporating surface. One of these is shown in the center of the engraving. Successive portions of fresh sap are added until there is sufficient concentrated to "sugar off." The fire is then slackened, and the syrup constantly stirred to prevent its burning. When so thick that a little of it, cooled on a spoon, or the end of a stick, takes a hard waxy form, a little brittle, the fire is removed, and the crystallizing takes place on cooling. If the sap has not been kept perfectly clean, the boiled syrup is strained through a thick linen cloth before the final concentration.

As ordinarily made, maple sugar is quite brown. If the flowing sap is collected in clean covered vessels, and no leaves, or dust, or other foreign substances are allowed to get into it through the entire process, the sugar will be almost as white as the common "refined" cane product. Half-inch augur holes in the trees, with galvanized-iron spouts to fit, —one for small trees, and two or three for large trees,—are much preferable to wooden spouts, as they injure the tree far less.



MAPLE SUGAR MAKING SCENES.

Designed and Engraved for the American Agriculturist.

Useful Articles.

BY D. Z. EVANS, JR., GERMANTOWN, PA.

SLED AND CLOD CRUSHER.—One of the most useful things on the farm, is herewith illustrated. As a sled, it is useful in handling logs, large stones, stumps, etc., while

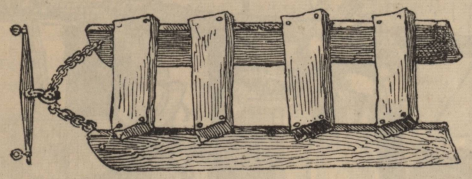


Fig. 1.—A CLOD CRUSHER.

harrows, plows, and other heavy implements can readily be taken thereon. When inverted, the heavy cross-pieces crush the clods very nicely. If the clods are unusually hard, or the sled too light, put on some "ballast," in the form of large stones. If made of hard-wood, as it undoubtedly should be, it is generally heavy enough for a clod-crusher without an addition of freight. Almost everyone, with the requisite material and tools can soon make one of these machines; it does not require much mechanical skill.

It should be made of oak, well seasoned, and 2 by 6 inches in size. The runners should be between 5 and 6 feet long. Four or five cross-pieces of the same size piece of wood, and the same kind, should be cut about 2 feet long. On the upper edge of the runners, **V**-shaped notches should be cut, to receive them, as shown in the engraving.

EXERCISE WIRE, FOR CHAINED DOGS.—Many persons have no room for their pet dog to exercise in. Sportsmen often have one or two hunting dogs, which they use during the gunning season, but which must be kept on the chain almost continuously, between seasons, to prevent them from being

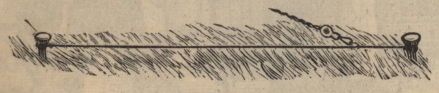


Fig. 2.—EXERCISE WIRE FOR DOGS.

lost, or stolen, or getting into mischief. The device given in the engraving, figure 2, will be found useful in exercising dogs. Two solid posts may be planted 20 feet apart, near the dog house, and projecting about 6 inches out of the ground. Twenty feet is a good average distance. A stout wire may be stretched tightly between and fastened to these posts, first slipping the end of the wire through the last link of the dog's chain. The dog is fastened to the chain, and soon learns how to use his comparative freedom. Old telegraph wire is a good thing for the purpose, and instead of slipping the wire through the link of the chain, a stout **S** hook may be made to fasten the chain loosely to the wire, as it will not wear out so quickly, the friction being very great while the animal is in motion.

Large Manufacturing. — Flour Ahead.—The reader may know some great manufactory, say of cotton, or reapers, or plows, that turns out a hundred thousand dollars worth of products, ten times over, every year! Let him imagine, now, five thousand three hundred and seventy other just such establishments. Their combined products would only equal in value what is annually made up in 67 varieties of manufactories, in our own country, excluding gas-making, work on fish products, mining, steam railroad machinery, petroleum refining, and some others.—In figures, these manufacturers are worth $5,369,667,706, ($107 for every man, woman, and child in the United States)—employing 2,738,950 persons. Flour making (value $505,161,712) excels all others, followed by slaughtering and meat packing ($303,562,413). These chief articles of food amount to nearly one-sixth of all manufacturing. Next come iron and steel, $296,557,685; lumber sawed $233,268,729; foundry and machine shops, $214,331,668; cotton goods, $210,950,383; men's clothing, $209,538,460; boots and shoes, $196,920,481; woolen goods, $160,606,721; sugar and molasses refined, $155,484,915; leather tanned, $113,340,617; and malt liquors, $101,058,388.

Winter Agricultural Gatherings.

The winter meetings of the State Agricultural Boards, as organized and carried on in Massachusetts, Connecticut, and several other States, are among the most attractive and profitable means for the improvement of our farmers. Much is learned from conversation with practical farmers and their discussions on these occasions. The theories and experiments that we find upon the printed page, have been run through the laboratory of the soil, and tested under new circumstances, and with brighter side-lights. We meet the most intelligent men of the profession, men who have brought culture and brains to their calling, as well as large capital. There are some things that must be settled, to our own satisfaction at least, before we invest money in them, and we cannot find a better place to settle them, than in conversation with the men who have made the investments, and thoroughly tested them. Just now the ensilage fever is prevalent, and the discussion is very lively *pro* and *con*. Many are almost persuaded to build a silo. It will pay to see the man who has run a silo for two years, and proved that this sort of fodder makes more and better milk and butter than does the same material cured and sheltered in the ordinary method. By all means, get out to these winter meetings, and "prove all things, and hold fast to that which is good."

Experiments with Onion and Clover.

It is very frequently the case that different varieties of seeds or plants are tested in alternate rows on the same ground or some fertilizer is tested by using it on rows alternating with those treated in the ordinary manner. A slight difference in the yield of the alternate rows is attributed to the use of different seeds or the special fertilizer. In 1881, my assistant selected five rows of Yellow Danvers' onions. These were fourteen inches apart, and were contiguous rows of the same length running across the patch of ground which had been used several years for onions. The rows were selected because they seemed to be of uniform quality and productiveness, and had been treated in the same manner.

The 1st row yielded 6¼ bushels.
The 2d row yielded 5⅝ bushels.
The 3d row yielded 6½ bushels.
The 4th row yielded 4¼ bushels.
The 5th row yielded 5 bushels.

If rows 1 and 3, alternating with 2 and 4, be compared, we get a yield of 13 and 10¼ bushels respectively, in the proportion of nearly 127 to 100, which is a very large difference. In case these alternate rows had been sown with different lots of seeds, or had been treated with a variety of fertilizers, this disagreement in yield might have very likely been attributed to the wrong cause. This large variation is now attributed to accident, such as is likely to occur in any experiment where small plats or short rows are compared.

Bees on White Clover.

In the spring of 1882, a student at the Michigan Agricultural College covered eight young heads of white clover with paper sacks. The sacks were tied to stakes to keep the clover in a natural position. Eight similar heads near by were marked at the same time. Of the heads covered

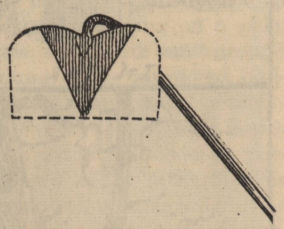
5 yielded no seeds.....	0	1 yielded 1 seed...	1
1 yielded 1 seed.....	1	1 yielded 3 seeds.....	3
Total.....			5

The eight heads of the same age left uncovered, yielded from twenty-five to thirty-five seeds, a total of 236 seeds. W. J. BEAL.

A Convenient Garden Tool.

BY EBEN E. REXFORD.

Every one who does much work in the garden, knows that one of the most convenient tools he uses is the hoe. More work, better work, and a greater variety of it can be done with this one implement, in the hands of a good gardener, than with all others. At least such has been the experience of the writer. But with the ordinary wide-bladed hoe I have had occasion to find fault more than once. I believe in keeping the soil loose among vegetables, as much as I do in keeping down weeds, and when there are no weeds to be pulled, very often the soil between such vegetables as grow close together will be allowed to become packed on the surface. As long as there are weeds to be pulled, the soil is loosened more or less, if there is the proper amount of weeding done, but later in the season the weeds give up trying to grow, and then the vegetables suffer most. An ordinary hoe is often unhandy to use in the garden-bed. There is danger of injuring the vegetables, and the work is unsatisfactory. I took a hoe from which a corner had been broken, and by a blacksmith's assistance, made an instrument for garden use, shown in the engraving. It is very convenient, and I use it in preference to the ordinary hoe, in places where the latter could be used conveniently. Such a hoe allows work between close-growing vegetables, and the soil can be stirred to the depth of the blade much more readily and thoroughly than with a hoe of which the blade is of the ordinary width. This implement is also very convenient for use, when transplanting vegetables. Weeds can be removed from the side of a plant by using the sharp point, and thus much hand-weeding can be done away with. The newly cut edges of the hoe should be made quite sharp to be effective.



AN OLD HOE CUT DOWN.

A Jersey Cow.

We herewith present an engraving of the prize cow "Augereys Lass." While the points of the cow, examined in detail, represent a very beautiful animal, the picture is faulty, on account of the distortion which, in some degree, is almost inseparable from photographs of animals. The head is a beautiful one, slender, nearly straight, yet dishing between the eyes, which are full and mild. The horns are fine, dropping forward and of the desired inward curve. The neck is thin, as are the withers. The back is straight and level, and the loin very wide. Her limbs are excellent, fine and straight. The owner's mind was clearly bent upon showing her head to the best advantage, and therefore he posed her so as to throw her "business end" rather into the background, which was a mistake, for thus it is reduced in size by the photograph. Still we see a well-quartered udder, with very little milk in it; but a full milk vein indicates milking capacities which, had the photograph been taken at a different time of day, would have shown a distended udder. The tail is thin, which is a merit, and the cow herself is as thin as if she were in full milk, as no doubt was the case. The fact that she was sent from Jersey, and took the second prize at the great (Islington, Eng.,) Dairy Show, is strong evidence in her favor; but that Mr. Le Brocq took her there, shows that in the view of a breeder of large experience, she is a typical Jersey cow. We beg our readers to note that in England they award "prizes" at "shows," while with genuine American affectation we award "premiums" at "Fairs" which are simply shows.

THE PRIZE JERSEY COW "AUGEREYS LASS."

Engraved for the American Agriculturist.

Barbed Wire Fences.

Steel wire in some of its many forms is becoming, in certain quarters, the fencing material for farms and railroads, and even for garden and lawn. Some of the points claimed in favor of this new fence are: cheapness, durability, ease of shipment of the material, and indestructibility by ordinary fires, like those arising from sparks of a passing locomotive. The barb should be short, with a keen point, standing at right angles to the wire. Some have advocated a dull point as more humane, but the success of the barb in turning stock resides in its sharp point. Often animals have been injured and even killed by wire fences, and all need to be introduced to this form of barrier. A colt, or cow, that has once been pricked by the barbs, will keep at a safe distance from the fence. Most of the damage has been done by the animals running upon the wires without seeing them. A strip of board may be nailed from post to post, near the top, to make the fence more conspicuous. The ribbon wire is more easily seen than the round form, but experience has taught that it is less durable. Now during the winter is a good time to look into this important matter of barbed-wire fences.

Chemistry of the Farm and Garden.—II.

If any green portion of a plant is kept for a long time at the temperature of boiling water (212 deg. F.) it loses the greater part of its sap, and the dry substance remains. In seeds this dry part is often 75 or 80 per cent, while in young, rapidly growing plants it may not be more than 5 per cent. When the dried residue of the plant is exposed to a higher heat, as that of a furnace, the larger part is burned away, and only a whitish powder, the ash, is left. The percentage of ashes varies with the kind of plant, and the nature and age of the organ.

The dry substance that may be burned away consists of carbon, hydrogen, oxygen, nitrogen, and sulphur. The sulphur, during the combustion, is changed in form to sulphuric acid, which unites with the ashes and remains with them. Some of the substances found in plants have no nutritive value, and may be considered as accidental. Among the leading indispensable food materials are the above-named five elements of the combustible part, which are present in all vegetation. The first three, carbon, hydrogen, and oxygen, make up the cellulose or woody fibre of plants, starch, sugar, oils, etc. All five of them enter into the composition of the albuminoids.

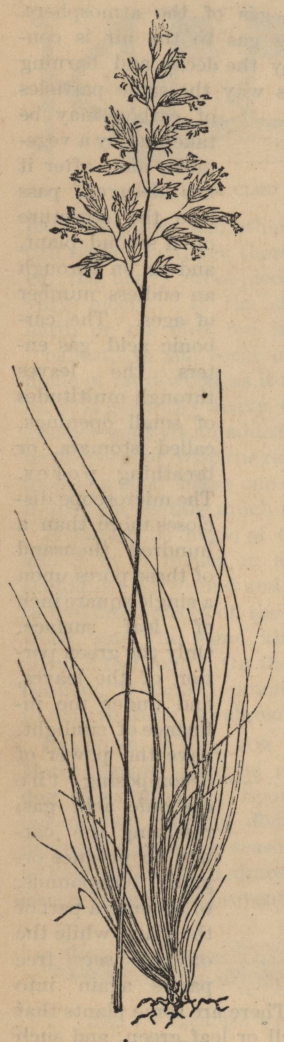
About half the weight of the dry substance of ordinary plants consists of carbon. This element, when in a free state, is a solid. It is familiar to us as charcoal, anthracite coal, black-lead, lamp-black, and diamond. The presence of carbon in plants is made known by a process of incomplete burning, as in the preparation of charcoal. Carbon, in its pure and uncombined forms, is very indestructible, excepting when exposed to a high heat; then it combines with oxygen, and forms carbonic acid gas. This is the familiar gas of the soda water fountains. It is produced by decaying vegetation, given off in the breath of animals, and is the deadly choke damp of coal mines. Carbonic acid gas forms, on an average, about four-hundredths of one per cent (.04%) of the atmosphere. The carbon necessary for the production of the annual growth of vegetation is derived from the carbonic acid gas of the atmosphere. The supply of this gas to the air is constantly kept up by the decay and burning of plants. In this way the same particles of carbon may be taken up by a vegetable, and, after it has decayed, pass into the structure of a second plant, and so on through an endless number of ages. The carbonic acid gas enters the leaves through multitudes of small openings, called stomata, or breathing pores. The microscope discloses more than a hundred thousand of these pores upon a single square inch of leaf surface. Only the green portion of the leaves, and under the influence of sunlight, have the power of decomposing the carbonic acid gas, reserving the carbon to produce organic compounds, to become a part of the plant, while the oxygen set free passes again into the atmosphere. There are some plants that have no chlorophyll or leaf green, and such are not able to decompose carbonic acid. They are called parasites, and absorb the carbon they need in the form of organic compounds that have been produced in the green leaves of true working plants.

Many experiments have been made to show that the plants absorb their carbon from carbonic acid gas through their leaves. One experiment by Boussingault was decisive: A living branch with twenty leaves was fixed in an air-tight glass globe, into which passed a slow current of air, containing a measured amount of carbonic acid gas. After streaming over the leaves, the air escaped, and the remaining gas was weighed. It was found that the foliage had removed three-fourths of the carbonic acid. Some plants flourish much better when the carbonic acid of the air is increased to one-twelfth. Foliage cannot long exist in the absence of the carbonic acid. Quick-lime rapidly absorbs this gas, and when plants are confined in vessels containing this substance, their leaves soon turn yellow and fall away.

The atmosphere is the great reservoir of carbon for plants, and as it usually contains enough for a hundred years, with a constant supply of carbonic acid from various sources, there is no ground for alarm concerning this most important element of plant food.

A Pasture Grass.—The Sheep's Fescue.

Our writers upon grasses have but little to say, as a general thing, about Sheep's Fescue (*Festuca ovina*), yet, in one or another of its forms, it often makes up a large share of a pasture. It is a grass affected, to a wonderful extent, by soil and location, and its extreme forms are most unlike. It grows throughout Europe and Central Asia, and in Australia and New Zealand, while in this country it extends from Canada to the Carolinas, and from the Atlantic to the Pacific. It grows on the high mountain ranges and in the valleys, adapting itself to every locality, and assuming a form peculiar to each. No grass is more frequently sent us from the "far West" for a name than this. Indeed, those who look to external characters alone, would find it difficult to believe that the grass three or four inches high from one of the Rocky Mountains could be the same as one two feet or more high from a low-land pasture. To such an extent is Sheep's Fescue modified by its surroundings, that botanists in different countries have described it as distinct species, and given names to over twenty-five different forms of this one grass. What is regarded as the typical species is shown in our engraving. The stem rarely reaches a foot in hight, and bears an open panicle of spikelets, which is often somewhat one-sided; the spikelets (flowers) themselves are frequently purplish, and usually bear very short bristles (awns) at the tips of the chaff. The stem arises from a tuft of leaves, which appear bristle-like, as the edges are rolled in towards one another, though the leaves upon the stem are sometimes flat. Upon the higher mountains, the grass is dwarfed to four or six inches, and is smaller in all its parts, and often in such localities, the panicle, instead of bearing spikelets of flowers, has each of these clusters replaced by a tuft of leaves. When grown upon richer soils, it becomes larger; its leaves are less rigid, and often flat, while it retains its verdure in the most severe drouth. This is known as the "Hard Fescue." It has been described as *Festuca duriuscula* (the specific name meaning "somewhat hard") but is properly *F. ovina*, var. *duriuscula*. The seeds of this are offered by our seedsmen and are deserving the attention of all who propose to lay down land to permanent pasture. Still another variety, with reddish foliage, known as "Red Fescue," is found near the sea coast and on the shores of the great lakes. On account of its long-running root-stocks, it is valuable in loose, light soils. The "Sheep's Fescue" is especially relished by sheep, and as some of its forms will grow in sterile soil, where little else will flourish, it becomes of importance in the natural sheep ranges of this country, as well as of the old world. In an agricultural view, the form known as "Hard Fescue" is of the greatest importance. Though its special value is as a pasture grass, it makes hay of superior quality. All kinds of stock thrive upon it; and from its power of resisting drouth, it remains green when other grasses suffer and become dry. On account of its fine foliage and its ability to resist extremes of heat and cold, it is an excellent lawn-grass, for which purpose it is much sown in Europe. In England, where much attention is given to establishing pastures, and mixtures of various grass seeds are prescribed for different soils, "Sheep's Fescue," in some form, is quite sure to be prominent in each mixture.



SHEEP'S FESCUE.

Convenient Derricks.

On the farm there are almost constantly heavy weights to be moved about. Any mechanical contrivance which will enable the farmer to accomplish this heavy work with ease must be welcome to him. I give two sketches of easily made "Convenient Derricks" for raising weights of almost any kind found on the farm.

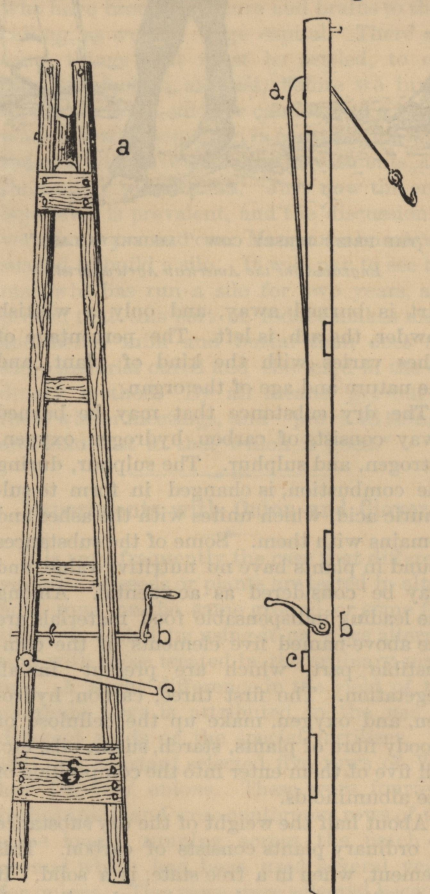


Fig. 1.—FRONT AND SIDE VIEW OF DERRICKS.

Figure 1 is made of two pine pieces, 2 by 4, fastened together with cross-pieces of inch-stuff, nailed on as in the engraving. An iron pulley wheel is placed between the two pieces near the upper end at *a*, see fig. 1. A round iron bar, *b*, one to one and a half inch in diameter and having a handle (the handle of a grindstone will do) at one end is put through both pieces about three or four feet from the lower end. A rope is fastened to this and runs over a pulley. To hang a butchered animal, place the upper end of the derrick on the pole upon which the animal is to be hung; fasten the hook to the carcass. While one man steadies it, another places his knee on the board *s*, and winds the weight up to the pole; then the brake *c* is moved under the handle, and the work is done. The 2 by 4 pieces should be about eighteen inches apart at the bottom.

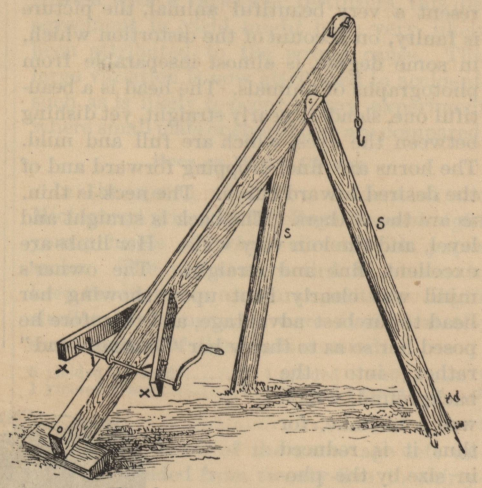


Fig. 2.—A TRIPOD DERRICK.

This derrick is made sixteen feet long and with it I can easily elevate all kinds of heavy farm machinery into the shed loft.

Figure 2 is a derrick that works on the same principle as fig. 1. It consists of a single piece with arms for windlass and two supports fitting into iron sockets. The sockets are fastened on with a bolt. It has a windlass similar to that in fig. 1. A half-inch iron rod, having nuts at each end, holds arms *x*, *x*, firmly in place. A short cross-piece is bolted across the lower end of the main piece to steady it.

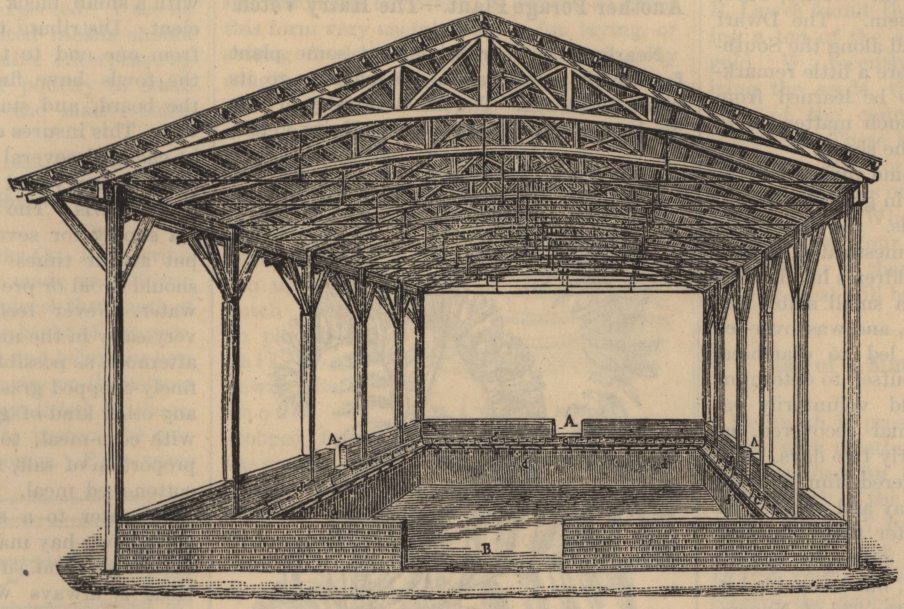
With this derrick a weight is raised, the lower end of the derrick is slid forward and the weight can be loaded into a wagon. A brake like that on fig. 1 may be attached to this one also. F. GRUNDY.

Turnips as a Farm Crop.

BY F. D. CURTIS.

A turnip crop will fit a meadow for corn, as the sod will be rotted, ready for giving the maize a vigorous start, and the ground will be more mellow and all the richer on account of the turnips. The sod should be turned over as soon as possible after the clover or hay crop has been taken off. It would be well to roll the ground and flatten the sward, to hasten its decomposition, and a few days before sowing time, harrow it thoroughly. A dressing of finely rotted manure should then be spread upon the surface, and cultivated into the soil, the ground being pulverized and made as mellow as possible. If wood ashes can be procured, they will help the crop if they are thinly scattered on top. A pound and a half of seed sown broadcast is ample for an acre. The seed should be covered with a brush drag. As soon as the turnips are up, they will be benefited by a

dressing of plaster (sulphate of lime), at the rate of 2 bushels to an acre. Good phosphate will make turnips grow, if harrowed into the ground with the seed, using 100 pounds to the acre. The advantages of a crop of turnips for the latter part of autumn are many-fold. If the farmer does not wish to harvest them, he can turn on his entire stock, and the hungry animals that might have roamed over frost-bitten, barren fields, will luxuriate in plenty. The turnips in the cellar will make beef and mutton, and keep the young stock in a thriving condition. No crop of proportionate value can be given at so little cost. During the winter the preparations should begin. The manure for the turnip lot should be put by itself, so that it may be thoroughly rotted, and the foul seed destroyed by its fermentation. Ashes should also be collected. All of these preparations will be for the benefit of the future corn crop as well as the turnips. A turnip crop has become a necessity on my farm. There is no danger of animals hurting themselves feeding in the turnip field. All kinds of stock are fond of turnips when allowed to help themselves, and eat leaves and all. They will soon fill themselves, and if the weather is cold, seek a sheltered place and chew the cud of contentment. This is not the case when in October, and perhaps well into November in our northern climate, they are forced to depend on what they can pick of grass which has lost its succulence, and is almost worthless as food. The loss which stock generally sustain in flesh at this time of the year is far more than the cost of a good turnip crop.



A COVERED FRENCH COMPOST HOUSE.—*Drawn and Engraved for the American Agriculturist.*

About High Farming.

BY JOSEPH HARRIS, AUTHOR OF "WALKS AND TALKS ON THE FARM," ETC.

We now have far better tools for cultivating land than formerly. In fact, our tools are better than our agriculture. And we may rest assured that so soon as we adopt improved methods of farming and gardening, our inventors and manufacturers will furnish all the tools, implements, and machines necessary to do the work.

But will it pay to adopt high farming? That depends on what we mean by high farming. High farming, if we confine ourselves to the production of hay, Indian corn, wheat, oats, and other ordinary farm crops, will not pay in this country. And Sir John Bennett Lawes once wrote a paper, or gave a lecture before a Farmer's Club in Scotland, in which he demonstrated that high farming was no remedy for the low prices of agricultural products of Great Britain and Ireland. I think, however, he would admit that thorough cultivation and heavy manuring could be profitably used for the production of what we usually term garden products.

Some years ago I was at an agricultural dinner in England, when the late J. J. Mechi, who had for many years recommended high farming, stated that, notwithstanding the low price of agricultural products, he was at that time picking several acres of peas for the London market, and he found the crop a very profitable one. Dr. Gilbert, one of the ablest agricultural chemists of the world, called out: "But, Mr. Mechi, this is not farming, it is market gardening." Mr. Mechi, though always ready, made no reply. He seemed to think the argument unanswerable, and therefore let the case go by default. But not so the coming generation of farm boys—and I hope of English boys also. What does it matter whether you harvest your peas dry or pick them green? What does it matter whether you raise cabbages, corn, or carrots, and other roots, to be fed out on the farm to other animals, or to be sold in market to our fellow citizens, who can not grow them for themselves.

The advocates of high farming make a mistake. Neither Old England nor New England will ever raise all the wheat required by its population. Even the great State of New York, I hope, will not long continue to raise on its own soil all the wheat it annually consumes. Commerce is the feature of the age, and wheat is carried ten thousand miles to market. Cheap bread is what the world wants, and what the world wants, the world will get. Cheap wheat can never be furnished by high farming. It must and will be grown largely on land manured only by nature. There may be places in which wheat can be profitably grown, where many of the constituents of the plant must be applied to the soil, just as there are places where we can profitably use chemical processes for the production of ice. As a rule, however, nature and commerce will furnish ice cheaper than even modern science can manufacture it. We shall have two kinds of farming. One will consist largely in the production of wheat, corn, oats, barley, cotton, sugar, and rice. The other, while it will not entirely neglect these great products, will aim to produce crops which can not be kept from year to year, or ordinarily be transported long distances.

The one system of farming will be carried on with little labor, and little or no manure, and what manure is used will be for the purpose of enabling the plant to abstract as much food as possible from the soil. In other words, our wheat growers may use superphosphate, because the application of phosphoric acid may enable the wheat plant to get a larger quantity of potash, nitrogen, and other constituents of plant food from the soil, and thus produce larger crops. This is the very reverse of high farming, though it is often very profitable farming. The other system of farming is the one which I want our young men to adopt. The change will be gradual, but it will surely come. It will be adopted in England, and also here. It is absurd to suppose that the soil of England, or of the New England or Middle States, can not be profitably cultivated, owing to the low prices at which the cheap land of the West and North-west, aided by cheap transportation, can furnish our people, and the people of New England, with bread. Let the bread come, and let us provide good Jersey butter to eat with it. The world as a world spends all it can get, and the less it spends for bread, the more it can pay for butter and bonnets, and the bonnet-makers will buy our fruit and vegetables.

A Covered French Compost House.

Herewith we present a cut and description of a new style of compost house recently erected in France. The building has the following dimensions: length, 27 meters; breadth, 21, and hight, about 3. A meter is nearly 40 inches of our measure. The building accommodates 30 head of cattle at a time. The roof is placed upon a frame-work of spruce, sustained by stays, resting upon a foundation of masonry, a meter in depth, and which serves to enclose the animals. The cribs for the cattle are movable up and down, as occasion requires, with the increase or removal of the compost. There are breaks in the wall for the introduction of food for the animals, and a wide opening for the entrance and exit of the manure carts. The advantages claimed for this system, are shelter from the weather, the continual settling of the mass under the animals there confined, the steady addition of new material, and the preservation of the compost in good condition. In the figure, *A* represents the breaks for the admission and distribution of straw and food in the mangers; *B* is the place for the entrance and departure of the carts that carry away the compost; *c* shows the cribs for the feeding cattle, and *d* the chains by which the cribs are lifted as the compost rises under the feet of the cattle. This building is a novelty in France, where it has attracted the attention of the agricultural journals. The description given here may lead to the construction of similar buildings in this country, with improvements.

Is Sheep Laurel Poisonous to Sheep?

BY DR. THOMAS F. WOOD, WILMINGTON, N. C.

This question is still open, unless the experiments here given will determine it. "Sheep Laurel," "Dwarf Laurel," "Sheep Kill," "Lamb Kill," "Wicky," are the common names of *Kalmia angustifolia*. It has long been under the ban by sheep-raisers as a poisonous shrub, but when I inquired of cattle drovers and butchers about their personal experiences, none of them could give me a definite reply, except the tolerably uniform opinion, that "sheep would not eat 'Wicky,' but if they did, it would kill them." The Dwarf Kalmia is very abundant all along the Southern Coast, and it is therefore a little remarkable that so little was to be learned from those most interested in such matters, as to the poisonous quality of the shrub.

Determined to make some investigations, I selected a young sheep in good condition, weighing about 23 pounds. He was taken from the pasture and domesticated, so that he would eat from the children's hands. He was at first confined in a small stable (his bedding made of Kalmia), and was over-fed by the children, which led to diarrhœa. It was necessary in the outset to determine if a hungry sheep would voluntarily eat Kalmia. After the animal recovered, no food was allowed for nearly two days. The fresh shrub was then offered him, and put within his reach for a day and night. He would not touch it. After this, for some days he was allowed food sparingly, Kalmia being mixed with his hay, but he avoided it, eating only the hay. On the 23d of November I made a decoction of a pound of the leaves and fruit, boiling it down to a half pint. At 3 o'clock, P. M., I gave 2 ozs. of the decoction; at 3.30 I repeated the dose; at 4 o'clock I gave 2½ ozs. It was only after this last dose that any effects were obvious. The sheep struggled against the last dose, and finally vomited a considerable amount of food, and frothy saliva, stained by the decoction, stood on his lips. He was now so much nauseated that no more was given him until 7 o'clock, P. M., when 1½ oz. was administered. At this time his lips were covered with frothy saliva. As soon as the last dose was poured down his throat, he fell, with slight tremor of his legs, and ceased to breathe. Presuming this to be the result of the drenching, I instituted artificial respiration, and in a few minutes the breathing was regular. Nausea and coughing were now very bad. At 9 o'clock, P. M., I found the animal apparently asleep, but, aroused by my approach with a lantern, he arose and staggered towards me, but settled down on his haunches and fell asleep. Nov. 24th, 8 o'clock.—Cerebro-spinal symptoms prominent. He can scarcely stand on his feet, and when down, falls asleep. 27th.—The animal, after several days of desperate illness, persistent vomiting, inability to stand, indisposition for food, has attempted to eat to-day, and will fully recover. The shrub has proved to be a violent gastric irritant, and deeply intoxicating.

My conclusions are: 1. Kalmia is not eaten even sparingly by a hungry sheep. 2. If it were possible that a very hungry sheep would touch it, it must be in very small quantities, and in such quantities—say two or three ounces—it would do no harm. 3. Kalmia, if given in large enough quantities, will cause death; but it seems that the plant is such a powerful emetic, that it would be difficult, except by special design, to give enough of it to cause death. 4. The prominent danger from the eating of Kalmia is the effect on the brain and spinal cord. Upon the whole, there is some foundation for the old tradition. This is not unlikely when we remember how morbid the appetite of animals sometimes becomes. Death from this cause must be uncommon, on account of the repulsive taste of the plant.

Another Forage Plant.—The Hairy Vetch.

Nearly every year brings out some plant for which great claims are made as to its value for forage. The latest novelty of this kind appears in Germany as the Hairy Vetch,

A NEW FODDER PLANT.

(*Vicia villosa.*) The common Vetch, or Tare (*V. sativa*), has never with us occupied the place that it does among the field crops of Europe; the winters are said to be too severe for the winter Vetch, and the summers too hot for the spring variety. The new one now offered, *i. e.*, new as a crop plant, is a native of Northern Germany, and has the general appearance of the common Vetch, but it is very hairy, and produces a greater quantity of seeds. The special claim made for it, is the readiness with which it grows upon the very poorest, most sandy soils. On ground so poor that little else will grow, this is said to make a dense mass of vegetation, and bear abundantly of pods and seeds. It is regarded as of great value in utilizing and bringing up poor lands. While it will grow under these unfavorable circumstances, it readily responds to better treatment, and on good soils grows three feet high. It is regarded as of especial value to sow with oats, the two plants together giving a great weight of most valuable forage. The engraving shows the top of a plant with flowers and seeds of the natural size. No doubt some of our readers who are on the lookout for novelties, will in time inform us of the probable value of the plant in this country.

Experiments in Keeping Poultry.

BY P. H. JACOBS, ATLANTIC CO., N. J.

Arrangements for Feeding.

Troughs are unnecessary. A long board, with a small block under each end, is sufficient. Distribute the food on this evenly, from one end to the other, and as soon as the fowls have finished feeding, brush off the board, and stand it on end out of the way. This insures cleanliness. Water should be changed several times a day, and can be given in any vessel that will exclude the feet of the fowls. The vessels advertised to hold "a supply for several days" are excellent, but are at times detrimental, as nothing should avoid or prevent a frequent change of water. Never feed on the ground. Feed very early in the morning, and as late in the afternoon as possible. In the morning, feed finely-chopped grass, radish tops, mustard, or any other kind of green food at hand, mixed with corn-meal, to which may be added a proportion of salt, fine bran, and linseed or cotton-seed meal. Mix the corn-meal, etc., with water to a stiff dough. In winter, good clover-hay may be chopped fine, soaked over night, and substituted for green food. Meat is always welcomed by fowls. At evening, feed hard grains, such as a mixture of wheat, corn, and oats, and, if easily obtainable, buckwheat. Have in the yards, and easy of access, small boxes containing a mixture of charcoal, sulphur, bones, and oyster-shells, broken small; also give a plentiful supply of gravel. In winter, a feeding place should be cleared off for the fowls when snow is on the ground, and a temporary shelter, open to the south, will be more acceptable to them than the inside of the best possible fowl-house, as they are averse to staying in quarters.

Diseases of Poultry.

The Cholera, or "Chicken Cholera," is the dreaded enemy that checks progress in poultry raising, and I know of no sure cure for it, though I have known it to yield when a spoonful of meal, saturated with coal-oil, was administered twice daily. Cholera never appears in cleanly-kept yards and houses, as it is born of filth. Lice will disappear from fowls by the use of the dust-bath, if the quarters are clean. Roup is caused by dampness and cold draughts of air on the fowls at night. Warmth, and a teaspoonful of a saturated solution of Chlorate of Potash, three times daily, is the best remedy for Roup. Fowls that moult early begin to lay early, and fowls that have fluffy feathers under the wings are hardier than those that are naked in those parts.

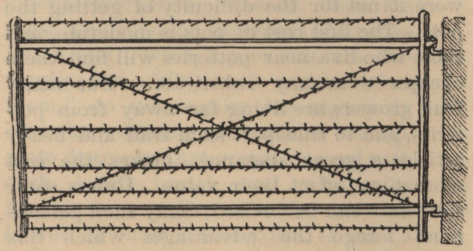
Profit.

Twelve dozen eggs is not over the average number for a hen in one year, and one dollar may be safely estimated as the cost of her keep, even when every ounce of her food is bought. Besides laying, she should hatch and rear for market at least one good brood of chicks. The reader can make the calcula-

tion of profit and expense to suit the locality; but in this section, when corn is $1 per bushel, eggs sell for 22 cents per dozen, but we have the advantage of Philadelphia, Atlantic City, New York, and Cape May markets. At times the price reaches 40 cents, but the average may be safely placed at 18 cents, though we pay high for corn and other food. I have had returns from one hen—$2 in eggs, and $4 in chicks, the expense being about $2; but while this applies to a single hen only, which had full attention, as an experiment, it demonstrates that the rule will work well with fowls in small flocks, and $2 clear profit can be safely expected. I see no reason why those of limited means should not embark in this profitable enterprise, by keeping large numbers of poultry in small flocks, the only secret in the matter being *not to crowd them.*

A Wire Gate.

Mr. J. J. Doan, Hendricks Co., Ind., writes us: I have in use a gate made as follows: There are two horizontal pieces the length of the gate; two uprights the hight of the gate, and extending both above and below the horizontals, in order to put a wire on the bottom to prevent the gate being lifted by hogs. There is a wire on top, to protect the gate from being pushed by horses. Four wires



A WIRE GATE.

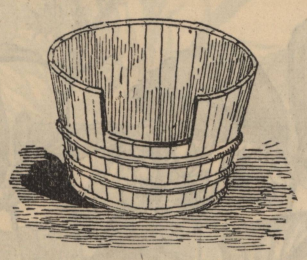
fill the space between the horizontals. These wires, being on the same side, tend to strain the gate. To counteract this difficulty, and to keep the gate from sagging, I have two diagonal wires on the opposite side. This gate serves all purposes of the common gate effectually. There is no inducement for boys to swing on it. Wind will not rack it. It is neat, light, and cheap.

Keep the Cattle Under Cover.

Even now, in some of the newer regions of the West, the easiest way to get rid of the manure is considered the best. The English farmers have long been obliged to feed farm animals largely for the fertilizers they yield, and this has proved that covered yards are the most economical. These covers are not so expensive as might be supposed at first thought. Substantial sheds, large enough to accommodate a hundred head of cattle, may be built at a cost all the way from $1,000 to $1,500, according to the locality and price of labor and lumber. The roof may be made with three ridge poles resting upon outside walls, and two rows of pillars. There should be ample provision for ventilation and the escape of the water falling upon the roof. The original cost will not be many dollars per head, and the interest on this will represent the yearly cost. If this should be placed at two dollars for each animal, it will be seen that this outlay is more than repaid by the increased value of the housed manure over that made in the open yard, and exposed to the sun and drenching rains. The saving in food consequent upon the warm protection of the animals has been carefully estimated to be at least one-tenth the whole amount consumed. In the saving alone the covered yard gives a handsome return upon the investment.

Half Barrels for Hens Nests.

The engraving shows one-half of a salt barrel, which is to be notched as indicated. I find this form very useful as nests for laying, or setting fowls. They may be packed away snugly, and are cleaned so readily, that farmers will be pleased with them. Some earth is to be placed in the bottom of each. Then a large sod which will nearly fill the tub up to the notch should be placed, on this, roots down. Earth should be scooped from the center of the sod, so that when the sod is pressed down, a slight depression may be formed. The nest is then ready for use. The earth should be well moistened if the nest is to be used for setting purposes. A sprinkling of sulphur on the sod should not be omitted, and the chicks will be a pretty sure "crop." The notch will prevent the hens from jumping down upon the eggs, which, especially with the Asiatics, is the cause of much loss. By omitting the notch, and nailing a strap to each side, we have a convenient and cheap basket for carrying light and bulky material. Saw a barrel in two and you will be astonished to see the different uses to which it may be applied. R. C. GREINER.



A BARREL NEST.

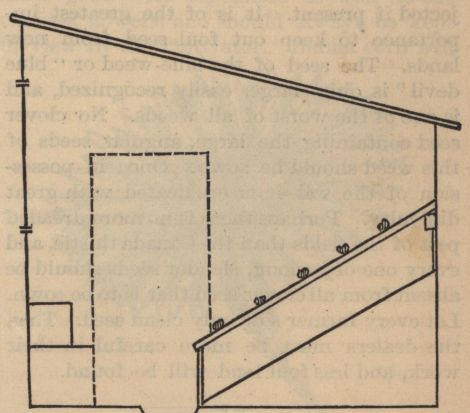
Cotton-Seed.—Cotton-Seed Cake and Meal.

From inquiries reaching us from various parts of the country, we are pleased to learn that farmers are awake to the importance of cotton-seed cake as a cattle food and as a fertilizer. The wording of several of the inquiries shows that many suppose the seed itself is used as food. This is very rarely used, and never should be. The hulled seeds, the kernels, are placed under a hydraulic press, which separates from them nearly half their weight of oil. The cake that remains, after all the oil possible has been removed, contains all the other constituents of the seeds, and an appreciable portion of the oil which the pressure is unable to remove. This is cotton-seed cake, which, for convenience in feeding, is broken up and ground, when it is known as cotton-seed meal. It will be seen that this bears the same relation to cotton-seed as oil-cake or oil-cake meal bears to flax-seed or linseed. Some of our friends ask how the two cakes compare in feeding value. Cotton-seed cake is much the richer food, and it is sufficiently exact to say that three pounds of it is equal in feeding value to four pounds of oil-cake. The great value of cotton-seed meal, like that of oil-cake, is as food for milk animals and those that are being fattened. It should be given with hay and roots. Sometimes cows do not relish it at first, but if it is mixed in small quantities with bran or meal, they soon become very fond of it. Four quarts are regarded as a full daily ration, but at first only a quart, or even less, should be fed, gradually increasing the quantity. The great manurial value of cotton-seed must not be overlooked. The crude seed has long been used in the cotton States as a fertilizer, but the cake is greatly concentrated, and nearly all its fertilizing constituents are found in the manure. Sir J. B. Lawes found that the manure from feeding a ton of the cake was worth $27.86 in gold. We recently observed that by utilizing the seeds, the value of the cotton crop of the country had been increased one-third. These benefits may be shared by farmers in the Northern States, if they will avail themselves of the cotton-seed meal as a cattle food. When its real value becomes widely known, our farmers will make such a demand for it, that not a ton of cotton-seed cake or meal will be allowed to go abroad.

Plan of a Simple Poultry House.

Herewith is presented a plan of a poultry house, with roosting-poles, laying-boxes, and also a method for collecting the droppings.

The width of the building is ten feet. The north side is 7 feet high, and the south side, 9 feet; the roof is made of boards 12 feet long; at the bottom is a gutter to receive the droppings. The fowls roost on horizontal poles, their droppings fall on and roll down slanting boards into the gutter, which is made 15 inches wide and 2 inches deep. There is a door as shown by dotted lines, with a lid entrance at the bottom, through which the fowls enter at night, or in showery or windy weather, taking shelter under the nests, which are 16 to 18 inches wide, and extends the whole length of the building. There is a walk along the gutter, from which the eggs are gathered. A wheelbarrow can be drawn in, when the droppings are taken from the gutter with a shovel. As the hens go in to lay, they first spring on to an alighting board. The nest spaces are 12



SECTION OF POULTRY HOUSE.

inches square. The nests are daily aired, and frequently purified by sunshine. The building can be extended to any desired length. This is a well tested plan of a poultry house, at once simple, effective, and economical. J. W. CLARKE.

Sowing Weed Seeds.

The scattering of the seeds of weeds is most carefully provided for in their natural distribution. The careless farmer does better by them than Nature, for he sows them broadcast in well prepared soil, and under the most favorable condition for a rapid growth. It will soon be time to sow clover seed upon the melting snows of late winter or early spring, and every farmer should be on his guard, and not seed down his land to troublesome weeds for many years to come.

The clover seed should be carefully examined. There is no need of argument here; if the farmer does not feel the importance of clean seeds and weedless fields, and will not select his seed with care, no amount of talk can do him much good. We hope that the number of such farmers is small, and growing smaller, year by year. The best way to examine the seed is to spread out a teaspoonful or so upon a sheet of white paper, and go carefully over the whole, with a hand lens or magnifying glass. The beginner will first need to become familiar with the clover seed itself, which looks, under the glass, like small beans somewhat distorted. The seed of the rib-grass, or narrow-leaved plantain, is of nearly the same size and color as clover, and their separation is effected with difficulty. The rib-grass seed is convex on one side, and concave on the other. This is not the worst of weeds, and, in fact, it has frequently been sown for pasturage, and thus introduced into a neighborhood. This plantain is so inferior to clover as a forage plant, that great care should be taken in keeping it from the field. The long, striped, and small seeds of the ox-eye daisy, or "white weed," are easily distinguished from the clover. This is a weed that covers many of the fields in the Eastern States, to the exclusion of other herbage, and is spreading westward. All seeds brought from the East should be carefully examined for this plant pest, and rejected if present. It is of the greatest importance to keep out foul seed from new lands. The seed of the blue-weed or "blue devil" is quite large, easily recognized, and is one of the worst of all weeds. No clover seed containing the large, angular seeds of this weed should be sown. Once in possession of the soil, it is eradicated with great difficulty. Perhaps there is no more dreaded pest of the fields than the Canada thistle, and every one of its long, slender seeds should be absent from all clover seed that is to be sown. Let every farmer sow only clean seed. Then the dealers must be more careful in their work, and less foul land will be found.

Broom Making.—A man with a small farm may increase his profits by growing a quantity of broom corn and making it into brooms during the winter. Broom corn requires a rich soil and needs much attention during its early growth. The young plants are weak and easily overcome by weeds. The later care and cultivation are much the same as with corn until the time for "tabling," by which is meant the breaking of the stalks about two feet from the ground, so that two rows fall diagonally across each other. If the farmer does not find time to make the brush into brooms during this season of leisure, it can generally be sold at a paying price.

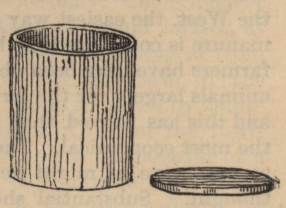
The Alpine, or "Four Seasons" Strawberries.

It is a matter of surprise to French horticulturists, that the varieties of strawberries most popular with them, are so little cultivated with us, that they may almost be said to be unknown. The Alpine strawberries are derived from *Fragaria vesca*, a native both of Europe and of this country. Our common varieties are mostly crosses between our native *F. Virginiana* and the South American *F. grandiflora*. The chief characters that distinguish the Alpines from other varieties are: pale, thin leaves, with the flowers on erect stalks, extending above the leaves, as shown in the cut. The fruit, usually conical, shows a marked difference in having the grains or seeds upon the surface, and not in little pits or depressions, as in our common berries. One reason for the lack of popularity in this country is the generally smaller size of the Alpines; another is their peculiar flavor. This, while exceedingly delicate and highly relished by many, is quite unlike that of the other kinds, and is, at first, disappointing. In the environs of Paris, where strawberries are grown extensively, the Alpine varieties (*Fraisiers des quatre saisons*) have almost entirely superseded the others. Whether the Alpines would ever be profitable in our markets, is doubtful; but for the amateur and for the home garden, they have many points in their favor, not the least being that they bear from June until frost. The common Alpine, of which there is a red and a white-fruited form, may be propagated from runners; the Bush Alpines, both red and white, may be multiplied by division of the old plants, but preferably by seeds; indeed, this is much the best way of propagating all the Alpines, as they come remarkably true from seed. The routine with the French growers is as follows: the earliest, largest, and best fruits are selected for seeds, which are washed out, dried, and sown early in July in pans or boxes. Late in August, the plants are pricked out to four inches apart each way. Early in the next March, they have their final transplanting, and are set twelve or fifteen inches apart. This first year, all the runners are kept off, and all the flower-buds are removed until the middle of June, from which time they remain in full bearing until frosts. The second year of bearing begins in May, and continues the whole summer, giving by far the finest and most abundant crop. When this is gathered, a new bed is made ready to take its place. The Alpines may usually be found at the nurseries, and seeds can readily be obtained from the French seedsmen.

THE ALPINE STRAWBERRY (*Fragaria vesca*).

Strawberry-Beds.—A Substitute for Pots.

It is now generally known that by striking runners in pots, one can save a year in making a strawberry-bed. This method is now largely practised, and would be more general were it not for the difficulty of getting the pots. The first cost of pots is moderate, and those who live near potteries will find them cheaper than any substitute. But many fruit growers are living far away from potteries, and to transport such frail and heavy articles a great distance, makes the cost more than offset their value. Unless some substitute can be devised, many such persons must forego the advantages which this method presents. Among the various substitutes for pots, one proposed by "A. R. W.," Greenbriar Co., West Va., is novel, and appears to be practicable. In spring, when the buds swell and the bark will "run" or peel, Mr. W. selects and cuts straight chestnut poles (suckers are preferable), from two to three inches in diameter. With a fine saw he makes a cut quite around the pole, through the bark, at every three inches of its length. A knife is then drawn lengthwise of the pole, cutting through the bark; this will allow each piece of bark to be pulled off. For bottoms, pieces are cut from the wood of the pole, about half an inch thick. One of these sections is placed in a piece of the bark, and held in place by putting around a tie made from the inner bark of the chestnut, or of bass-wood. These bark pots are filled with earth, plunged in the soil of the bed, and runners are struck in them as if they were regular flower-pots. They have one advantage over the clay pots: when the plants are transferred to the new bed, it is not necessary to remove them, but the pots and all are planted in the soil without disturbing the roots, as the bark soon decays. The above engravings show a section of the bark removed, and a bottom made from the same pole, ready to be put in, when the wooden pot is complete.



Winter Cheer.

The conditions of country life are so different from those of the city, that farmers are fortunately spared the spectacle of misery and want so familiar to those who dwell in populous centres. Yet the biblical remark that "the poor always ye have with you," is as true of every portion of the United States as it was of Palestine. The inevitable law cannot be escaped, nor can its penalties be avoided. It would be a sad world, indeed, if there was no one to be helped, and none who stood ready with their kindly ministrations to make good the claim of a common kinship of humanity. Charity is the great winter work of thousands in our large cities, and there is need enough of all that can be accomplished in the way of searching out cases of suffering, and rendering the desired assistance. It is not always crime or vice that has plunged these unfortunates into penury. They may have been overmastered by sickness; employment may have given out, and careful search and inquiry may have resulted only in perpetual disappointment and discouragement. There are many causes that may bring about these unhappy conditions, and it is to the credit of human nature that so many people stand ready to assist when these pitiful emergencies arise. Indeed there are those who act upon the words of Charles Lamb, and "when a poor creature, outwardly and visibly such, comes before them," do not inquire too rigorously into the veritable existence of the separate distresses that are catalogued with such bated breath and whispering humbleness. "Do not rake into the bowels of unwelcome truth to save a half-penny," but give freely. You "pay money to see a comedian feign these things, which, concerning these poor people, you can not certainly tell whether they are feigned or not." From the first frosts or snowfall of autumn, until spring releases flood and field from the chains of winter, the claims of the poor are ever present and ever pressing. The charity of the city takes on something of pretension and ostentation. It finds expression in balls and fairs; in monster undertakings, where pleasure goes hand in hand with the beneficence which has often no better excuse for its existence, than the fact that it has these complex and startling surroundings. But there are not lacking the house to house visitations, which prove more effective, and by which the individual wants of silent sufferers are alleviated. This last method is that which fits in with the habit and experience of country life. It is the sort of vigil which prosperity keeps over the poverty of the neighborhood. It suffers not the fire to go out upon the hearthstone. It sees that the cupboard is not empty, and, above all, it offers employment, and thus spares the debasement that the honest poor must feel when they are classed as mere "beggars," and can make no return for the kindness shown them, and the material aid rendered. First, warm and feed the poor man, then give him a chance to earn his bread. He is thereby encouraged, and the giver has the double satisfaction of helping the needy, and of bringing him into healthy relations with the general system of industry. If the man is a public benefactor who makes two blades of grass grow where there was but one before, what shall he be called who puts an end to the waste and stagnation of idleness, and gives the impulse of fresh hands to the labor by which men thrive and communities are made prosperous? None understand this better than the hard-working rural population, and none are more willing to encourage the struggling, or to assist the suffering. The winter months are not without their never-ceasing summons to labor.

Fig. 2.—EVERLASTING FLOWERS (*Acroclinium roseum*).

They afford many opportunities for recreation, for amusement, and for instruction. They form a pleasing part of rural experience, and the brightness and crispness of the winter evening are recalled in the hours of summer toil. The winter enjoyments will be all the more pleasureable, if words of cheer and deeds of charity are scattered along the cold pathway of the season.

Unproductive Vines and Trees.—"J. T. G," Dearborn, Mich., having several unsightly and unproductive grape vines, cut them all off just above the surface of the ground. Over a dozen shoots started from the root of each, three of which were allowed to grow. The next year the canes from them were cut back to three buds each, and the shoots from these buds formed healthy canes, and the second year after the vines were cut down, gave an abundance of fruit. A large standard pear tree, eight years old, never having fruited, a circular trench was cut around it, four feet from the trunk; this, which was the width of a spade and ten inches deep, was filled with richly manured soil. As a result the tree bore last fall as fine fruit as ever grew. In both cases, the treatment was eminently proper and sensible for unproductive vines and trees. The pear tree was root-pruned, a generally effective remedy for unfruitful trees, which might be applied oftener than it is.

Everlasting Flowers.—A Novelty.

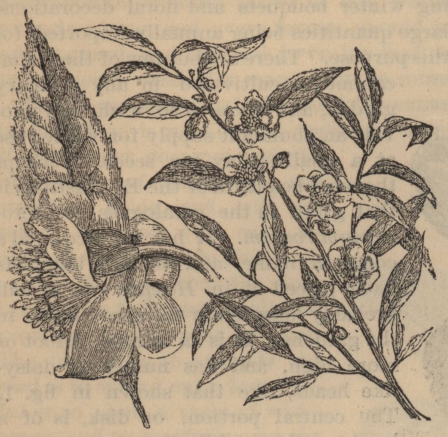
Under the general term "Everlasting Flowers" are grouped a number of different plants, which agree in one particular: The parts of these flowers are of a stiff, papery nature, and, if gathered when first opened, they retain their form and color when dry. On this account they are much used in making winter bouquets and floral decorations, large quantities being annually imported for this purpose. There are but few of these that cannot be cultivated in any ordinary garden, and those who wish, can provide an abundant supply for winter use at a small outlay for seeds. Perhaps the most beautiful of the Everlastings is that given in the catalogues as *Acroclinium roseum*. It has not acquired a common name, and though botanists have placed it in *Helepterum*, it will probably long retain the above name in the gardens. It is an annual, a foot or more high, and has numerous daisy-like heads, like that shown in fig. 1. The central portion, or disk, is of a bright yellow, while the rays, or outer circle of petals, are of a clear, lively rose-color, which is kept in great perfection in the dry flowers. A few yeara ago, one of the seed-growers at that great center of seed-growing, Erfurt, Prussia, found in a field of 10 or 12 acres devoted to this flower alone, a few flowers which showed a tendency to become double; *i. e.*, the disk or central portion bore some ray flowers. Seeds of these were carefully saved and sown, and in a few years, by selecting the most double of these each year, a double variety, with flowers like those in fig. 2, was established. This should serve as a hint to our cultivators, whether of vegetables or of flowers. Whenever they observe a departure from the usual form, if only a slight one, provided it is in a desirable direction, let them follow it up, by sowing the seeds of the improved plants, and thus establish a new variety. The "Trophy," which, when it appeared, marked a wonderful advance in tomatoes, was the result of many years of careful sowing of seeds of the best fruits, until the desirable qualities became established. This holds good with vegetables as well as the choicest flowers, and should always be kept in view by the cultivator. Indian corn will

Fig. 1.—AN EVERLASTING FLOWER.

quickly show the result of careful selection of the seed for planting, and one may soon establish a "pedigree corn" which will materially increase the yield of each acre planted.

The Tea as an Ornamental Plant.

Those who cultivate house plants may well add a Tea plant to their collection. Naturally every one is interested in raising the plant, the leaves of which afford an almost universal beverage, and besides being a curiosity, the plant itself is interesting and somewhat showy. It is a slow-growing evergreen



BRANCH AND FLOWERS OF TEA PLANT.

shrub, with dark-green leaves. In cultivation it is kept as a bush, about six feet high, but in the wild state it is said to form a tree 20 or 30 feet in hight. It begins to bloom when but a foot or two high, and in pot-culture may be kept of any desired size. It bears very pretty white flowers, which closely resemble those of a single Camellia, though they are only about an inch across. Indeed so close is the resemblance in all respects to the Camellia that recent botanists place the Tea plant in that genus. The flowers, borne singly, or in small clusters, are followed by a pod, about the size of a hazel-nut, containing one to three seeds. The shape of the leaves, flowers, etc., is shown in the engraving. In window culture, the Tea, like the Camellia, will not endure a hot, dry atmosphere; it thrives best in a room where there is no fire. In summer, it should be placed out of doors in a partly shaded place. The plant is hardy any where south of Washington. The Tea is propagated by cuttings and very readily from seeds. Plants are to be had of florists, and some seedsmen offer seeds.

Practical Pear Culture.

BY A PRACTICAL GROWER.

The growing of pears for market has met with varying success, not so much from the fact that diseases and insects seriously affect their growth and productiveness, as from the fact that the business, in its details, is indifferently understood. It is only when one's efforts are properly directed, and vigorously prosecuted, that success is assured. Having commenced, some fifteen years ago, to raise pears for market, we have had a long and severe experience, but have yet to find any year which did not yield a snug profit. One of the greatest faults into which beginners are apt to fall, is expecting, or anticipating too much. It is more satisfactory to figure the profits after the crops are harvested, than when the trees are planted. The matter of varieties is one of the first importance, and those who have had experience will never fall into the error of planting too many. It pays much better to plant a few of the well-known, hardy, and desirable market sorts, than to set out many varieties with but few of each kind. The number of really desirable market sorts of pears, for profit, can be counted on one's fingers, those which will do well over a wide range of climate and soil being surprisingly scarce. People who anticipate an easy time, and large and continuous profits, in growing pears for market, had better disabuse themselves of such fallacies. It takes constant, frequently hard and intelligent work, to produce profitable results. There may be some localities where the pear will not do well, but they are few. Although longevity, as well as productiveness, is greatly governed by soil and locality, nearly every thing depends upon the care, experience, and diligence of the pear-grower, as his hand and knowledge must be plainly seen in all the management. We may, at some time in the near future, give our experience with varieties. Those who propose to commence an orchard for market purposes the coming spring, should settle this point at once. The profitable varieties for such an orchard are: the Bartlett, standard, and Duchesse d'Angouleme, dwarf (or half-standard, as it can be made, or will in time become), will be found the very best. A planter can not go far wrong, if he plants three-fourths (or even four-fourths) of his orchard with these.

Pruning.—Good and Bad.

Pruning is often necessary to renovate a neglected orchard, and as we have heretofore suggested, it may be the means of increasing the value of forest trees. In the excellent work of Des Cares (translated by Prof. Sargent), he gives numerous illustrations of the mischief resulting from injudicious pruning. A common fault in removing a branch, especially a large one, is the leaving of a stub or stump of greater or less length, as in fig. 1. This, if it has no buds or leaves, soon dies, and is practically a foreign body, as much as would be a wooden plug of the same size driven into the tree. The appearance of such a decaying stump at the end of five years is given in fig. 2. These illustrations are taken from an oak tree, but the result is the same with other trees. The decay of the stump continues until at the end of ten years it has nearly disappeared, as shown in fig. 3. The mere decay of the stump would be of little consequence, were not the disease communicated to the tree itself. As a decaying fruit will soon affect sound ones with which it may be in contact, so wood in a state of decomposition will rot the living wood, and greatly injure, if not destroy the tree. Figure 4 represents the tree cut open, to show the extent to which the wood of the interior of the trunk has been destroyed. This, if unchecked, will continue, and in time leave the tree a hollow shell, worthless as timber or as fuel. In no case, whether in removing large branches or small ones, of fruit or forest trees, should a stump be left. Those persons who go about hacking at street trees, under pretense of "pruning" them, are very apt to leave such stubs, and thus lay the foundation of the decay of the trees they have already disfigured. A clean cut, which leaves a scar no larger than the branch that has been removed, will soon heal over, especially if the surface of the wound is made smooth and covered with melted grafting-wax, with shellac varnish, or paint. In France, coal-tar is used for this purpose. If the branch to be removed is large and very heavy, it may be cut off at some distance from the trunk, and the stump thus left may be removed with greater ease, and without danger of stripping the bark.

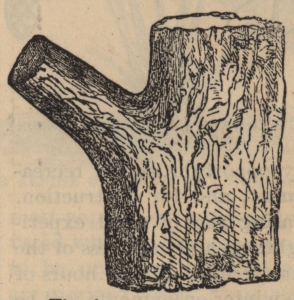


Fig. 1.—A LONG STUMP.

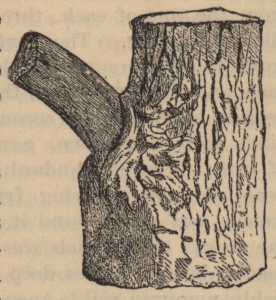


Fig. 2.—AFTER FIVE YEARS.

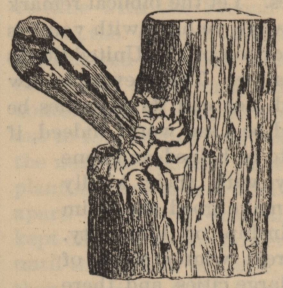


Fig. 3.—AFTER TEN YEARS.

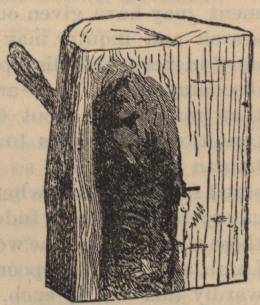


Fig. 4.—INTERIOR OF TRUNK.

Experiments in Crossing Apples.

BY PROF. W. J. BEAL.

Will the pollen, or flower-dust, from one variety of apple change the appearance of another variety? It is not uncommon to see apples of a variety which is usually smooth, bearing strips of russet from the stem to the blossom end. These russet strips have often, even by good botanists, been considered evidence of a cross, or a partial cross, by pollen from a russet variety. On examining several such apples, I can not now remember to have seen a single one where the russet stripe corresponded to a cell or carpel of the fruit. This we should expect in case the russet stripe was due to russet pollen. A few years ago, I crossed some smooth variety with pollen from a russet tree. No effect was produced on any of the apples. In 1881, the experiment was repeated, using pollen of a Golden Russet on the stigmas of the Northern Spy. In no case was there any indication of russet on the skin of the Spy apples. I think the russet stripes found on apples, which are usually smooth, are to be attributed to what we call a "sport." I have seen a white pæony and a pink one coming from the same root; a yellow sweet potato coming from a stalk which bore the rest of the crop of a red color. It is not very uncommon to find a similar change in color in common potatoes. These are slight changes, or sports, the cause of which is not known.

Hot-Beds and Cold Frames.

BY DR. A. OEMLER, OF GEORGIA.

The material most frequently used for the formation of hot-beds, when a considerable degree of heat is required, is stable manure, that of well-fed horses being the most effective. When a lower temperature suffices, a steady heat may be obtained by mixing vegetable matter, like leaves, spent tan-bark, etc., with the stable manure. The manure, without too much long litter, should be thrown from the stables into a conical heap, and kept moist four or five days, when it should be turned over. After the lapse of four or more days, according to the season, it will have acquired a steady heat, and be ready for use. The site for a hot-bed or cold frame should be on sandy or gravelly, or well drained soil, convenient to water, well protected from north and north-west winds, not only free from overhanging trees and the shade of houses, but open to the sun from its rising to its setting. Unless the aspect of the bed be a point or two eastward of the south, the plants growing at the eastern end will be dwindled by the shade of the frame. The site having been chosen, the manure is placed either on the surface, or in an excavation about six inches deep, in the shape of a solid parallelogram, extending in length and breadth one foot beyond the dimensions of the frame to be placed upon it. The frame should be as wide as the length of the sash, and its length will be determined by the number of sashes. No bed should be constructed, if avoidable, for less than four "lights," and the longer it is, the more heat will be developed, and the more in amount will be retained.

If the site is exposed to high winds, yellow is preferable to white pine for the sash, in consequence of its greater weight. The sash should be three by six feet, with glass not larger than eight by ten. The smaller the glass, the less expensive the breaks. The panes are to be puttied to the sash, and to overlap each other like shingles. As dust collects between the laps and obstructs the light, these should not be more than one-fourth of an inch wide. Such is a hot-bed. The site, the frame, and the sash for a cold frame are as above described. The difference between the two is solely, that the former is heated by fermenting material, which creates "bottom heat," while the latter is warmed by the confined heat of the sun alone.

For a cold frame, the soil should be elevated six inches above the general level, and finely spaded up and raked. Glass is the proper material for sash, and the cheapest in the end. Frames covered with cotton cloth may be used as a substitute, however. To render the cloth more translucent, the following ingredients may be used: one quart pale linseed oil, four ounces resin, and one ounce sugar of lead. The sugar of lead should be ground with a little of the oil, then the remainder of the oil and resin should be added, and the varnish applied with a wide brush while warm.

The following directions apply to the cold frame alone: According to the nature and size of the seed, and the character of the soil, the seeds are to be sown from a quarter of an inch to an inch deep, in drills three or four inches apart across the bed, and more thinly at the back and front, than near the middle of the bed. Each variety should be sown in separate cold frames, or, when not practicable, only such should be sown together as require about the same degree of heat to germinate, and particularly such as demand the same management and protection, until the plants are removed.

Good Old Flowers.—The Wallflower.

One need not be very old to have seen brilliant, quick-growing novelties in flowers, crowd out of sight many of the old-established favorites of the garden. Who now sees a bed of Rocket Larkspurs? Where

A WALLFLOWER.

shall we find a collection of the old Stock Gilliflowers, so beautiful and so sweet? These and many others have disappeared, one after another, before verbenas, geraniums, and others, the only merit of which is that they are showy. We are old-fashioned enough to think that beauty and goodness are not incompatible, and that we need not the less admire a flower because it is fragrant. A child with a strange flower, first looks at it, and then carries it to its nose. It has not yet learned the beauties of "ribbon" or "Mosaic planting." How few young persons would recognize it, if shown the Wallflower—so beloved of their grandmothers? This old favorite, which brought in the spring with richness of color and a wondrous fragrance, has gone—and what replaces it? In the hope of renewing an interest in these old favorites, we suggest to those not quite given over to gardening fashions, but who grow flowers because they are flowers, and they love them, and not because they will help to make up a red or a blue patch in a design, to restore the Wallflower to its old place. As young people of the present day know it only by name, we give an engraving of a fine single specimen; there are also double kinds, which some prefer to the single. The Wallflower is a native of Europe, and so called because there it grows upon ruins and in the crevices of old walls. It was originally yellow, but cultivation has given us flowers with orange, reddish brown, and violet markings. In Europe, it is a hardy perennial; with us, in the Northern States, it is barely hardy, and must be put under cover in winter. Seeds sown this spring will afford plants which will flower the year following. They should be potted singly, and at the approach of severe weather be placed in a pit, a cool greenhouse, or in a dry cellar, to be brought out in early spring. We hope that the coming generation of flower-lovers will not let these good old plants quite die out. Let them try the Wallflower, and they will agree with old Parkinson, who, more than two centuries ago, wrote: "The sweetnesse of the flowers causeth them to be generally used in nosegayes, and to deck up houses."

The Treatment of Bulbs.

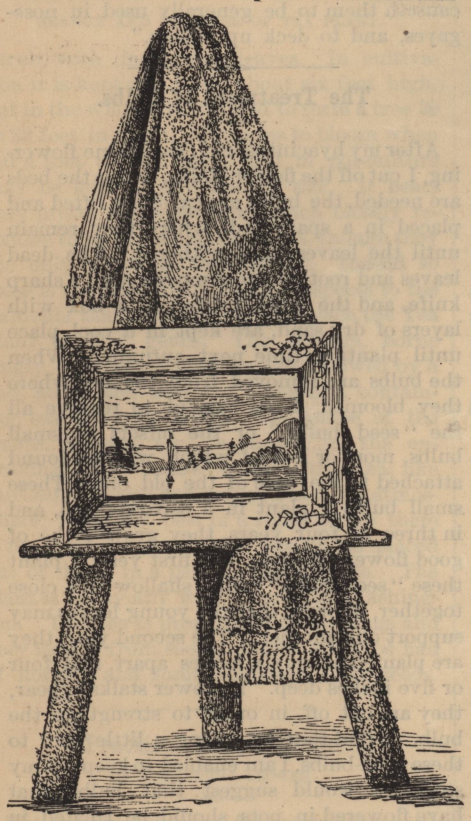
After my hyacinths, etc., have done flowering, I cut off the flower-stalks, and as the beds are needed, the bulbs are carefully lifted and placed in a spare bed, where they remain until the leaves have withered. The dead leaves and rootlets are removed with a sharp knife, and the bulbs packed in a box with layers of dry sand, are kept in a cool place until planting time next autumn. When the bulbs are removed from the bed where they bloomed, I am careful to remove all the "seed bulbs," or the offsets of small bulbs, more or less of which will be found attached to the base of the old one. These small bulbs I plant in a separate bed, and in three or four years, they grow to be of good flowering size. The first year, I plant these "seed bulbs" rather shallow and close together, in order that the young leaves may support one another. The second year, they are planted about six inches apart, and four or five inches deep. If flower stalks appear, they are cut off, in order to strengthen the bulb. I find that by giving a little care to these seed-bulbs, I am enabled to keep up my stock. I would suggest that bulbs that have flowered in pots should be treated in the same manner. When the flower-stalk has been cut away, water is gradually withheld, and when the leaves fade, the bulbs are treated in the same manner as those taken from the bed. Bulbs which have not been strongly forced, but have bloomed, will be useful if properly cared for. L. S.

Useful and Ornamental.—Beets with leaves of the most brilliant crimson and the richest yellow, have been proposed for ornamental planting. Singularly beautiful in the cutting and fringing of their leaves, as well as in a variety of delicate colorings, are the ornamental Kales. But neither these nor the beets have been much used in ornamental grounds. There seems to be something incongruous in plants coming under the two heads: useful and ornamental. A lawn ornament should not suggest "bacon and greens."

THE HOUSEHOLD

A Plush Easel.

An ordinary pine easel can be made a very ornamental piece of furniture, for parlor, or library, by covering it with plush, which may be done as follows: Cut three strips of whatever colored plush may be desired, broad enough to wrap smoothly around each stick, and long enough to cover from the bottom up to the hinge. Draw the plush smoothly around the stick, so that the joining shall be at the back, and tack neatly with gimp tacks. Cover each one in the same way, leaving the pointed top bare. A long plain piece, the full width of the material, is then lined with silk of some contrasting color, and trimmed at either end with chenille fringe. This piece is to be draped gracefully over the pointed top of the easel, which has been left uncovered, one end falling over the side, the other brought down, and carelessly laid over the cross piece (as represented in the cut), which has also been covered with plush in the same manner in which the sticks have been done. As the pins which hold the picture cannot be neatly covered with the material, they may be gilded either by using the liquid gold paint, or gold leaf. The latter is more durable, but the gold paint less troublesome. The holes in the easel are, of course, all covered, but can readily be felt by pressing the finger on the plush. Rest the cross piece upon them, and place the drapery as described. With a handsome picture resting upon it, this easel will be found an ornamental piece of furniture, and not at all difficult to make.



A PLUSH EASEL AND PICTURE.

Old Stocking Legs.

The child playing near me as I write, this winter morning, has on a soft flannel undersuit made of old flannel (worn but not hardened by use), pieced out by soft merino stocking legs that extend above the knee, and by pieces of his own old stocking legs for wrists. Another boy is just preparing himself to start out in the deep snow by putting the legs of an old pair of men's socks over his trousers at the bottom, and tucking them inside his arctics. The same boy has learned to prepare himself for long expeditions in the cold, by putting on two pairs of stocking legs, as described above, with old pieces of flannel wrapped around his feet and filled in the bottoms of his arctics. These, without shoes, are much warmer than the ordinary shoes and arctics with one pair of stockings. He carries an evening paper in all weathers, and when the mercury is 20° below zero, or even lower, he can keep his feet warm without difficulty. He has a pair of big loose mittens, made without thumbs, and with gauntlet-shaped wrists, so that he can easily thrust in his hands. These are made of thick woolen coat cloth, lined with pieces of blanket, and again with pieces of warm old stockings. They are worn on a strap, and fastened to his overcoat when he wears them, so that his hands know just where to find them. B. C.

Fancy Articles.

Art in every form, and particularly in house decoration, is seemingly carrying everthing before it, and every month brings out richer, and more magnificent designs in painting and embroidery. Plush and velvet are favorite materials, for the groundwork, and make the richest backgrounds for the exquisite sprays of flowers, flying birds, or æsthetic figures thrown upon them.

One handsome chair that we have seen, was of wicker-ware, and had luxurious cushions for the seat and back, of crimson silk plush, upon which snow-balls were embroidered in the new-raised work, now so fashionable. This is done by cutting short bits of silk or crewels and sewing them in, a few at a time. It is a long and rather tedious task, but superb when completed. The popular design of golden rod is done in the same manner.

An oriental-looking scrap-bag is made of four Japanese pictures, joined together by red, yellow and blue bands, crocheted of single zephyr or shetland wool. A bag of any material desired—Cretonne or Silesia is pretty—is fitted in the bottom, and a gay border is put around the top, which is drawn up with a cord, and the whole is finished off with dainty little tassels at each corner. They somewhat resemble Chinese lanterns, and are very useful. A convenient trifle for a housekeeper is a ball of twine fitted in a knitted case of bright-colored work—like the soft parlor balls used by young children—but with a hole at the bottom, through which the string passes and unwinds from the inside of the ball. Suspended from it is a small pair of scissors on a narrow satin ribbon—loops of the same ribbon being used to hang it on the wall, where it will always be at hand, when there is a parcel to be tied up. Dried grasses, leaves, and berries are much used in decorating fancy baskets, staining-paper cases, etc., and gilded acorns are frequently seen. At a recent church sale, sprays of natural flowers arranged on large palm-leaf fans sold readily, while tasteful winter bouquets were shown of bitter-sweet on a back ground of evergreens, tied with bows of light ribbon. The lambrequins of Macremè lace still hold their own, but the tying of the knots is so hard on the hands, that many prefer to crochet them of fish-twine, which is very quickly done and exceedingly pretty when lined with some bright color or ribbon run through the openings. Ladies' bags and shopping-bags are also crocheted of the fish-twine, which comes much cheaper than the flax used for the real Macremè lace.

Cement.—One of the most useful cements for general use, is made by melting together two parts of common pitch and one part of pure (not vulcanized or manufactured) gutta percha. When thoroughly mixed, pour into cold water, and make up into convenient sticks. There are few articles that this will not unite and hold, when the color is not objectionable, and the article is not to be heated.

Boxes in the Window.

Few who have not tried it are aware of the brightness a bit of living green brings into a room. Flowers are well, but all can not have them, and some must be content with the green. Whether it

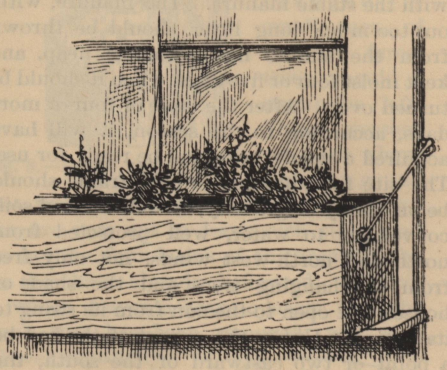


Fig. 1.—A WINDOW-BOX.

be the one living room of the "pioneer," or a richly-furnished room in the "mansion," green brings cheer, and is welcome. A box at the window is better than pots. It may be a handsome box, inlaid with costly tiles, with a zinc lining, but the plants will give no more pleasure than if in a cheap box, put together with the materials at hand. All houses do not have broad window sills, upon which the box can be set, but if there is a mere ledge, the box can be at the window. If there are a few inches of projection upon which one edge of the box can sit, the rest is easy. Put a strong screw in the end of the box near the top and front; fasten a stout bit of copper wire to this, and carry the other end of the wire to another screw in the window casing, and the box will stand firm. Figure 1 shows one end of a box thus secured; of course, the place for the upper screw will depend upon the kind of casing. In order to have a really satisfactory window box, it must be thought of, and made ready in season. Those who provide such pleasing window decorations, do not always make the most of them. Few seem to be aware of the great improvement that may result by the addition of a light trellis, or lattice work, over which vines are allowed to run. A low, light arch, like that shown in fig. 2, or a much taller one, nearly doubles the ornamental capabilities of a window box. Such a frame may be made of rattan, or equally well of straight willow shoots, and may bear an Ivy, or some more

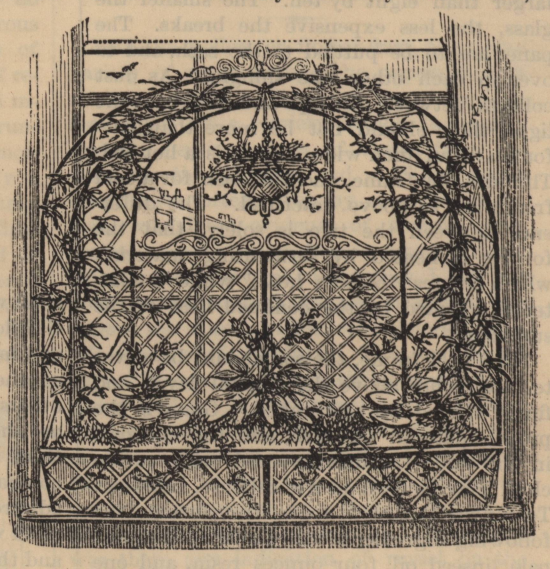


Fig. 2.—FRAME FOR WINDOW PLANTS.

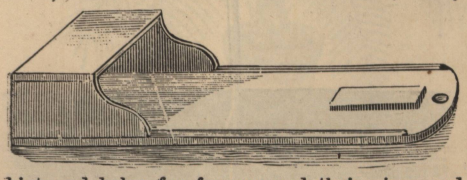
rapid-growing climber. If boxes were not prepared beforehand, one may find means even now to bring in a bit of green; seedling evergreens from the woods may be taken up, or, in the absence of these, a few carrots planted in the soil will give a mass of foliage, which for beauty is equal to that of many costly exotics. Morning-glory seeds, if sown at the ends of the box, will soon give vines for a trellis. But in mentioning window boxes, we had a practical end in view. Such a box, three or four inches deep, will supply a garden of moderate size, with plants of early cabbages, tomatoes, lettuce, etc., and allow such vegetables to be enjoyed at least a month earlier than those from seeds sown in the open ground. It will be well to have at least two such boxes, one in which to sow the seeds, and the other to hold the plants, or a part of them, when large enough to transplant. If soil was not laid in before cold weather, it may be difficult to find a supply for the boxes. If properly treated, the soil beneath the manure pile should not be frozen, and will answer the purpose.

Useful Notes for the Household.

SAVE THE BREAD CRUMBS.—The waste of bits of bread in some families is unpardonable. Every fragrant of clean bread, if no bigger than a pea, should be saved and used. If attention be given to this, the quantity of crumbs that would otherwise be wasted, will astonish one who tries it. Do not allow the crumbs to mould; place them in a plate in the stove oven with the door open, until they are quite dry. Then roll the crumbs, until they are as fine as meal, and keep in a carefully closed vessel; a fruit can is excellent. Crumbs prepared in this way, are useful to bread chops or cutlets, oysters for broiling, egg-plant for frying; they make the most perfect of bread puddings, and are unequalled for stuffings.

KEEPING THE ROOM WARM. — The closing of the cracks of the windows, by the use of rubber weather strips, keeps out currents of cold air. In the absence of these strips, paste strips of paper in the cracks. Pieces of board or of scantling, covered with carpet, placed at the bottoms of the doors, will keep draughts of cold air from the feet. But we need not only to keep out the cold, but to keep in the heat. In homes where there are no inside shutters, and there is only the glass, with perhaps an outer blind, between the room and "all out doors," a great deal of heat passes off. The hanging of a curtain at the window will prevent this in a great measure. In the absence of anything else, a newspaper put up at the window may be used, and will answer the purpose of throwing the heat back into the room as well as a heavy blanket. In this, as in other matters, the little leaks are constant sources of loss, and need looking after.

SCOURING BOARD.—"G. H. D.," Rensselaer Co., N. Y., writes us: I notice from time to time, sundry



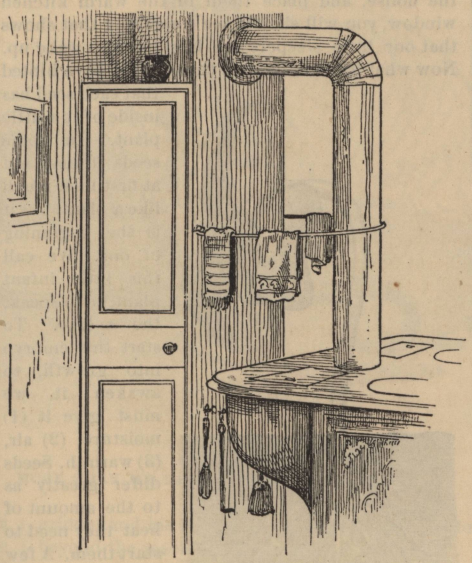
hints and helps for farmers and their wives, and thinking that I have improved the old untidy way of scouring knives and forks, I herewith send you a sketch of a scouring box. It consists of a board 6½ in. wide by 15 in. long, rounded at one end, with a box 2½ in. deep, closed at the back, forming a receptacle for the brick, brush, or cloth, etc. When not in use, the box can be hung up in any convenient place. The main board or bottom is provided with a block 3 in. long, by any convenient desired width, placed near the hole, upon which the article is held while being scoured. The sides of the board are raised ½ inch, by which the fine brick, etc., is kept upon the board, thereby preventing any dirt from falling upon the table. It is easily made, and any man at all expert, can produce one in a very short time. The bottom and top may be moulded, which adds a very neat appearance to the box.

Corner Cupboard and Line for Drying Dish Towels.

Two very convenient things in our kitchen are, a cupboard in the chimney corner, and the wire line around the stove pipe, on which the dish towels are dried. The line, which is of copper wire, is put up by screwing hooks in each side of the chimney, and stretching the wire from one to the other. The line will bear considerable weight without sagging.

The cupboard is built in the corner made by the chimney, which extends down into the wash-room in the cellar below, and is fitted up with shelves for holding such things as are in constant use about the stove when cooking is in progress.

Unless, as is the case in our kitchen, there is a



CUPBOARD AND LINE.

door in the way, another cupboard on the other side of the chimney will make a good place for putting away seeds, and things generally which should be kept dry. MRS. BUSYHAND.

Colds, and Diet Treatment.

Many people think diseases are mysterious and intangible things that go about this mundane sphere seeking whom they may devour. It is more reasonable to believe, however, that sickness is a natural punishment for a violation of Divine laws for heathful living. In many families a cold is always supposed to become something more than a mere cold, unless there is active doctoring. But the sequel depends very much upon the state of the blood. If this is in an impure condition, made so by poor food and bad air, a simple cold is almost sure to produce some more formidable disease, as croup, diphtheretic sore throat, rheumatism, neuralgia, or pneumonia. It has been found that colds may be made light by judicious care in the beginning, even when a hard cold seems to have been provoked by great exposure. A child goes out to play, or remains in a cold room for a long time, without sufficient clothing, and becomes thoroughly chilled. To prevent a hard cold, warm the child as soon as possible and keep it warm, feeding it lightly during several hours following. Indigestion has a great deal to do with our colds, Let the food be simple and nourishing, and not in excess of nature's demand, and there will be little trouble with sickness. Thanksgiving and Christmas dinners are responsible for a great many after ailments.

I notice how common it is to take physic as a cure for various minor troubles. It would be decidedly better to reject the medicine and adopt the regimen of more moderate and judicious food. Watch your neuralgias and rheumatisms and see if they have not some direct relation to big dinners or particular dishes of "conglomerate indigestion." I have noticed that pickles, chow-chow, and the like live in the same houses with rheumatism, and that the connection is often close between neuralgia, and the excessive use of meat or other stimulating nourishment; and that candy, and sugar, and sweet cakes and puddings are used most freely in those families where there is much trouble with croup, and sore throats. Pie is also a great offender whose most active and insidious ally is in the greasy compounds let loose by the frying pan. F. E. R.

The Uses of Celery.

Celery should no longer be considered one of those luxuries that can be enjoyed only by the wealthy. Its culture has of late years been so simplified that it is now scarcely more difficult than that of any other garden vegetable. There is now no reason why every farmer and every other person, who has the land, and wishes celery, should not have it. Those who use celery only in its raw state, or dressed as a salad, know only a part of the excellence of the vegetable.

STEWED CELERY is a favorite dish at our table. Celery is washed and cut up in pieces of an inch or less. For this, stalks that are not thoroughly blanched, and which would be rejected by those who eat it raw, may be used. That which is imperfectly blanched is stronger than that which is white throughout, but any unpleasant flavor is driven off in the cooking. The celery is covered with water, and allowed to stew gently until thoroughly soft. If there is too much water for the sauce, pour off the excess, add a generous lump of butter, and flour, stirred first in a little cold water, enough to make a sauce about as thick as cream, add salt, if needed, and pepper, if desired. Those who try this, will be quite sure to repeat it.

CELERY SOUP, OR PUREE OF CELERY.—Cut celery small, and stew it until it is very soft. It is then to be rubbed through a sieve, or a colander, to separate the fibres. This celery pulp is added to a good stock—a plain soup made from meat, with only salt as a seasoning, slightly thickened, and seasoned with pepper, etc. This is the usual celery soup as met with at restaurants. It is better if made with milk. We are not aware of any definite proportion; the celery pulp is thinned with milk; flour stirred up with butter is added to slightly thicken it, and salt and pepper are used as seasoning. A small lump of sugar will greatly improve it. Serve very hot.

A Guitar Needle-Book and Pin-Case.

To make this form of a needle-book and pin-case, cut four pieces of rather light pasteboard of the shape of a common guitar, and four pieces of silk the same shape, but half an inch larger. The silk may be of any color, but a light-brown for the two outside pieces, and a bright color for the inner ones, looks best. Cover the pasteboard with the silk by taking long stitches from edge to edge. All the markings on the front, excepting the strings, should be embroidered before the silk is put over the pasteboard. For the strings, use yellow silk, but for the rest a dark brown. After the silk is drawn smoothly over the pasteboard, put on the strings, taking each stitch through the pasteboard and drawing it very tight, then bind the front all around, except the handle, with narrow dark-brown ribbon. Sew the front and one of the inside pieces neatly together over and over at the edge, then the back and the other inside pieces.

Cut leaves of flannel or white cashmere. Work each leaf around in button-hole stitch and fasten to the top of the back piece. Put pins around the front, and tie the front and back together by a ribbon bow around the handle.

Varnish for Fancy Work.—An excellent varnish for hanging baskets, or for leather work, is made of half a pound of asphaltum in one pint of turpentine. Let it stand over night before using. Card-receivers, and watch cases can be made of butternut shells, and varnished with this preparation. It is useful also for cones and acorns.

The Doctor's Talks.

Who saw the Transit of Venus? No doubt nearly every one of you on the 6th of December last, had a bit of smoked glass, trying to see a minute black dot on the face of the sun. Not only were young and old then looking at the sun, but most of the Governments of Europe sent observers to different parts of the world to watch it. Much was to be learned by observing this little dot on the sun, and thousands, yes hundreds of thousands of dollars were expended in making observations of this transit, as another will not take place in over a hundred years. If a transit of Venus took place every day, how few would notice it! The interest in this transit was owing in good part to its rarity.

On Your Own Farms—All Around You,

there will soon be taking place some of nature's movements quite as wonderful, in their way, as the Transit of Venus. There will be no parties sent out with telescopes to see them—you will not even need the smoked glass—but if you will use your own eyes, you may see wonderful things. Let us suppose that we—that is, you and I and all of us—lived on an island, where all the plants were large trees that supplied us with abundant food, and we were not obliged to raise any grain or other crops. Imagine that a stranger visiting our island, should take from his pocket a little thing, smaller than a boy's marble, and say, "Here is the most wonderful little box in the world, I have had it for months, you see that it is hard and dry and smooth. Yet it has within it a living tree, which I can bring out, and which on one condition, shall become as large as that tall oak over there."—Who would believe the stranger at first? On the island, you had seen no plants start from the beginning, and for this one little box, to contain all this, would it not be stranger than any fairy story or tale of the Arabian Nights? Some of you might ask the stranger about the "one condition" needed to bring the big tree out of the little box. He would say, "Time. This holds but the beginning of the tree, time must do the rest." You have already guessed that our little box was an acorn—or oak-seed.

Let Us Try Beans and Corn,

which are common everywhere, and so large that a magnifying glass will not be needed to see them.

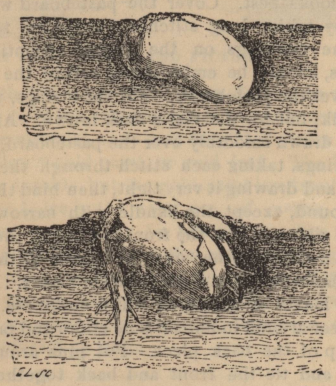


Fig. 1.—GERMINATING BEANS.

Take a dozen beans and as many kernels of corn. If you lay these on a shelf, they will remain for years without change. What then is needed to start them into life? How shall we wake up the sleeping little plant within? Knowing that in the field or garden, seeds are put in the moist soil, you will think that the first step in rousing our little sleepers should be to give them moisture. It may be that you will put your beans and corn in a cup, and cover them with water. Should you do this, you will find in a few days that they have spoiled, and have begun to decay. You will conclude that they need moisture, but not too much. This is true, but the real trouble is, that in covering the seeds with water, you have shut out the air. Seeds, then, need both moisture and air to arouse them. Place some soil in a flower-pot, a box, or whatever will hold it; put the seeds in the soil, and set the whole on the window-sill or some other place outside. Still no signs of life! You will inquire why, with moisture and air, they do not grow? Recollect that seeds will not be put into the open ground for some months yet—not until the ground gets warm. If you now bring your soil and seeds into the house, and place them in the warm kitchen window, you will shortly see something that shows that our little sleepers are beginning to wake up. Now what have we learned thus far? I have hinted that each seed has inside of it a little plant. In some seeds it may not at first look much like a plant, but it is the beginning of one. We call this little infant plant, so to speak, the *embryo*. To start this embryo into growth, to awaken it, we must give it (1) moisture, (2) air, (3) warmth. Seeds differ greatly as to the amount of heat they need to start them. A few will begin at a few degrees above freezing, but the seeds of our useful plants need a warmth of 40° and over, and some from warm countries as much as 70°. You notice that beets, peas, and some other seeds are sown as soon as the frost is out of the ground, while for corn, beans, and others, we wait until the soil is well warmed—in May, or later. Now we wish to give our corn and beans the proper conditions, which we can do by sowing them in soil, or in sand, or even saw-dust. Another plan is to take two pieces of thick, soft paper, or cloth of some kind, double this a few times, place it in a deep plate, and put the seeds upon it; lay over them the other piece, add water enough to keep the cloth or paper moist, cover with another plate, and set all in a warm place. You will wish to look at your seeds every day. If in soil or sand, you must carefully dig one up, but those on the cloth or paper can be watched more readily. At first you will notice that the seeds will be larger than before; they will take up moisture, and usually break their covering or skin. Figure 1 shows what happens to the bean after the skin breaks. A little stem (*radicle* is the proper name for it), which was bent up in the seed, will point downwards, no matter which side up the bean was placed. This radicle grows longer, and will soon lift up the bean out of the soil; then roots will begin to grow, and after awhile the beans will appear as in fig. 2. You will notice that the two halves of the bean in this cut are pushed up above ground. These are the "seed-leaves," and by the time the bean is fairly up, as in fig. 3, these seed-leaves will be much shrivelled. They were at first full of food, and this has been used to feed the plant until the roots had grown, and it could take care of itself. The corn seed, on the other hand, is not raised up out of the soil. At first it will show its radicle; soon a little shoot will grow upwards, and at last the little rolled-up leaves appear above ground, as we see them in the field. These are striking things for you to see, but there are others to notice. THE DOCTOR.

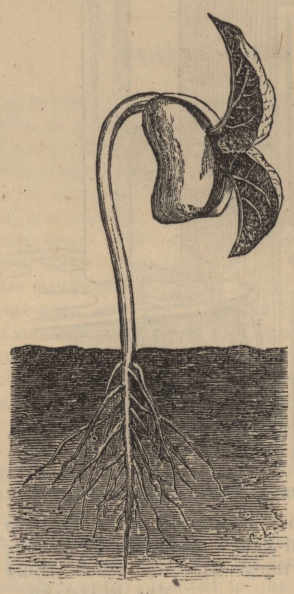


Fig. 2.—YOUNG BEAN PLANT.

Valentines.

The custom of choosing "Valentines," and sending small gifts is very old. It originated among the ancient Romans who kept the feast of "*Februata Juno*," (Feb. 15th,) in much the same manner as Valentine's day is observed now: and it was certainly practised among the gentry of England early in the 15th century. The oldest poetical valentine of which we have record is one composed by Charles, Duke of Orleans, who was taken prisoner at the battle of Agincourt, in 1416. It was written during his confinement in the tower of London, and is still to be seen among the royal papers in the British Museum. When Madame Royale, daughter of Henry the Fourth, of France, built her beautiful palace near Turenne, she named it Valentine, in honor of the saint of that name; and at the first entertainment given in it, ordered that the ladies should secure their partners for the year, by lot, but reserved to herself the privilege of choosing her own. Then, whenever a ball was given by the princess, each courtier sent his chosen lady a nosegay, while in return, at the tournament, the lady provided the trappings for her knight's horse, with the proviso that she should receive the prize that he obtained. This practice caused the parties to be called Valentines; and seems to have been the original of the custom in France.

The hearts and darts, and daintily painted cards of our day, were then unknown; but flowers, gloves, and other articles of apparel were considered suitable gifts for Valentines. In small villages of Scotland, at Valentine parties, the names of the lads and lassies are written on slips of paper, and mixed in a bag, from which each one draws, to discover who shall be his or her valentine. In Hertfordshire, England, the children meet in assemblies, and proceed in a body to the house of the

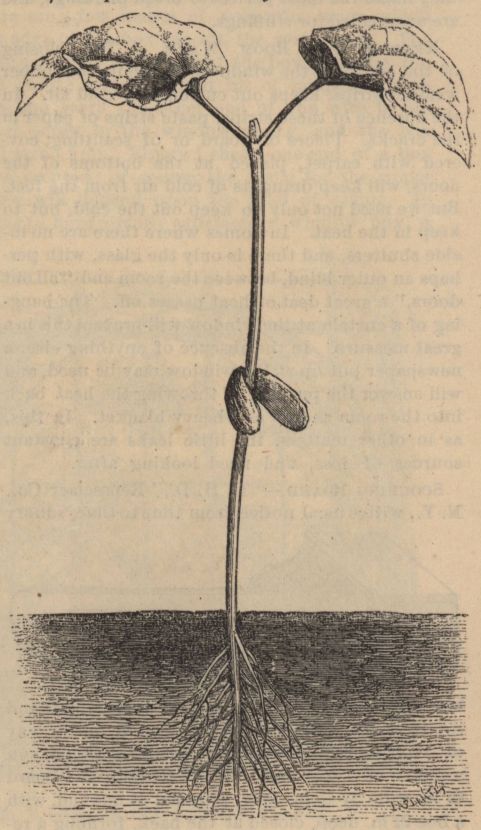


Fig. 3.—BEAN PLANT AT LATER STAGE.

chief personage of the place, who throws them wreaths, and true lover's knots, from the window, with which they adorn themselves. The girls then select one of the youngest boys, whom they deck out more gaily than the rest, and with him at their head march through the town, singing:—

"Good morrow to you Valentine,
Curl your locks as I do mine,
Two before, and three behind,
Good morrow to you Valentine."

This refrain they repeat under the windows of all

the houses they pass, and receive small coins from the inhabitants. Original valentines generally afford the most amusement, especially if they contain appropriate allusions; but the cards prepared for the festival this year are very beautiful, designed by skilled artists, and many will delight both to send and receive them.

A Long-lived Plant.—The Date Palm.

In former times, slow-growing plants were kept from year to year. The owners became really attached to them, and they seemed, after a manner, like one of the family. If any of the children wish to raise a plant which will grow slowly, and last them until they become old men and women, let them, when they have any fresh dates, plant a few of the seeds, or "Date-stones," as they are called. We have known them to come up when planted in the open ground in warm weather, but perhaps the safer way will be to place them in a pot or box of earth in a warm place in the house. If the soil is kept moist, and the stones are fresh, in a few days a long, dark-green, curiously plaited leaf will appear. Subsequently this will unfold itself, and then another and another. Your little Palm, for such it is, will need a pot or box of good soil, and, being from the warm part of the globe, it must be kept from the cold. Year after year it will increase in size and beauty, and when five or six years old, if nothing has injured it, it will become a graceful young Date-tree, like that shown in the engraving, an ornament to the room in winter, and in summer to the piazza. It will be interesting to watch the leaves as they appear, one after another, at rare intervals, and should you, fifty years hence, say, "I planted the seed of that Date when I was a little boy," or "girl," the plant will not be likely to have passed beyond the days of its youth even then.

DATE PALM IN POT.

A Monkey-Shine.

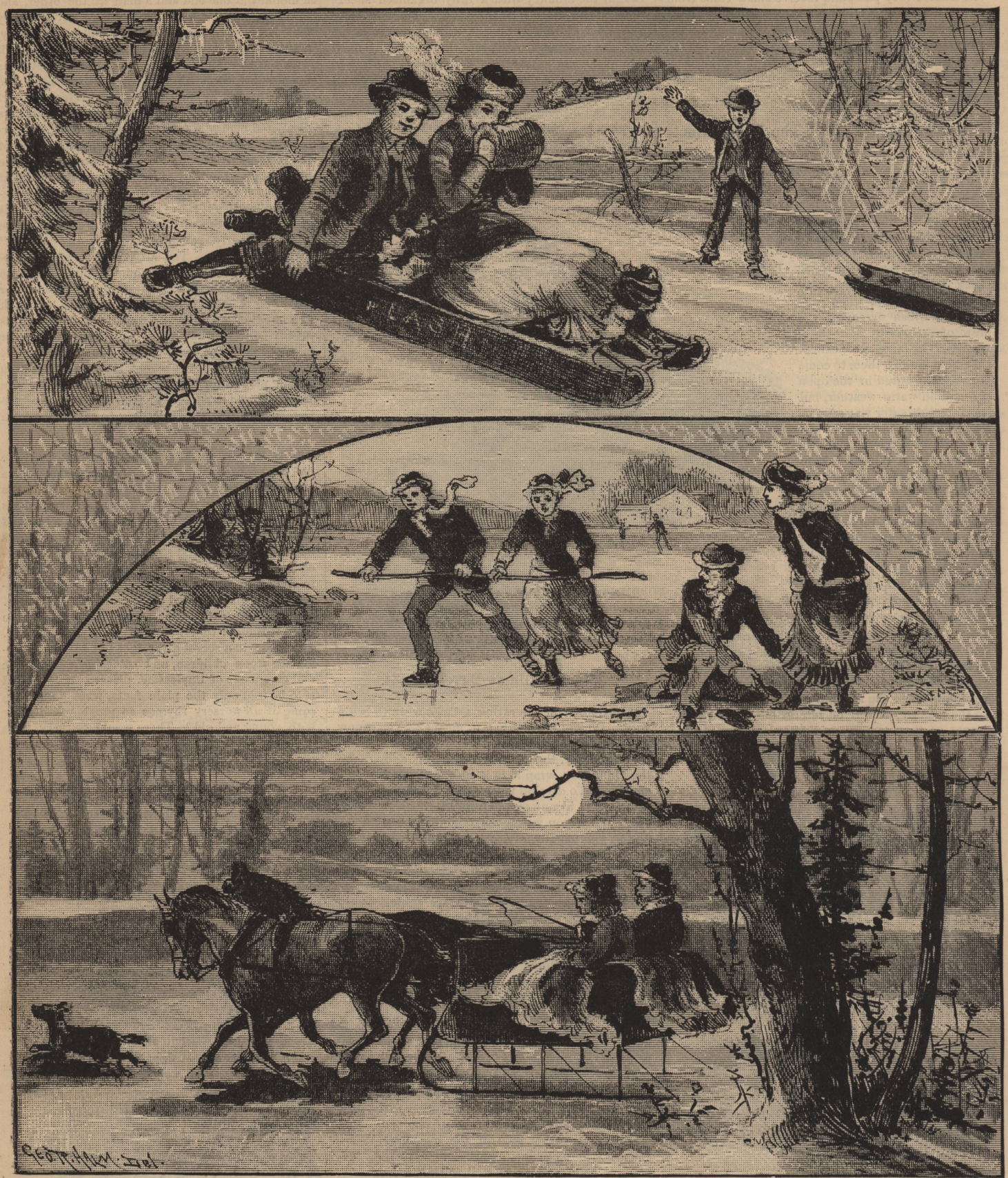
The monkey in our illustration has been in mischief, after the manner of his kind, and is suffering the consequences. He has ventured into the domain of an old student, and made free with the properties that are lying around. It is reasonable to suppose that he has sat, his nose with spectacles bestrid, and made believe read the ponderous book that lies by his side. Weary of his work, he has turned for comfort to the snuff-box, in imitation of the absent student. The result is what might have been expected, and our artist has caught the monkey with a fully organized sneeze upon his expressive features. One moment more and the explosion will come, with what results can only be imagined. Observe the peculiarly fixed and expectant expression of the eyes; the raised arm, with the limp hand; the open mouth, with all that it suggests of coming events. Even the curve in the tail intimates a suspicion of disaster. The monkey is a playful and lively creature, good-natured and active, and is no doubt a familiar object to most of our young friends. The menagerie is exhibited in all parts of the land, and the organ grinder and his impish attendant penetrate regions beyond the reach of the travelling collection.

MORE THAN HE BARGAINED FOR.

The Duckling's Development.

"Development" is rather a large word to begin with. Do you know what it means? You know what an envelop is; you envelop your letter in a cover, that is, you wrap it up, and the thing you wrap it in is also called an envelop. To *de*velop is the opposite of envelop; it is to unwrap, or unfold, to open out. When you watch the blooming of a flower, you usually say, "it unfolds." If you wish to use a large word, you can say that "it develops, and I am watching its development," and it would mean the same thing. You may occasionally see something said about development in books and in the papers, for there has been of late years much talk about different kinds of development. Some of the philosophers, because monkeys are in some respects more like men than are other animals, have asserted that men originated from monkeys; that in a long, long series of years, the monkey could so change and improve that it developed into a man. If this could possibly happen, the change must be very slow, for people have known and kept monkeys for centuries, and they are still only monkeys. It may be that some proof may be found on the other side of the question. We sometimes see men, who, it is not difficult to believe, have started on their way back towards the original monkey. It is not always that we look to grown men to show this. Did you never see a boy, who, if he kept on in his present ways, would be more likely to develop into monkeyhood than into manhood? The trouble with this monkey and man story is, that we do not find any half-way specimens. They are all "no mistake" monkeys, or all men, however poor specimens they may be. Now, artists have no trouble with the development view. If they wish to prove the monkey origin of man, they have only to take a sheet of paper, draw a monkey at one end and a man at the other, and fill up the space with beings that are part monkey and some man, and some man and part monkey, and there you have the whole history of mankind, with but one fault—it isn't true. Our artist does not think it worth while to begin with an animal so much like man as the monkey; he prefers to start with the duck. One of the ancient philosophers compared man to a fowl without feathers, and perhaps the artist thought he had only to get rid of the feathers to develop his duck into a man. The pictures give his view of the way in which it might happen. There is that enormous bill and the peculiar voice to get rid of—to develop away. If his man was to be one of the advertising doctors, these might properly remain; it would be "quack" from first to last. The artist's view of development will no doubt amuse you. Is there not some warrant in taking this view of development? for have we not heard persons spoken of as "a duck of a boy," or "a duck of a man," and does not this plainly point to what might have been the manner in which man was developed? The great trouble is, that while the artist would have no difficulty in finding models for the extremes—the duck and the man, when he looks for the intermediates, the "betweens," nature has something to say about that.

Is it Right or Wrong?—Not long ago, we had the pleasure of listening to a discussion on the subject of Santa Claus. Is it right to delude the children with the idea that their Christmas gifts come from an unknown person, who has a heart of boundless generosity, combined with marvelous fleetness of foot? The strongest argument advanced by the negative side, was that anything tending to deceive is always wrong, and may lead to a disrespect for parents, and a disregard for the truth. On the other side, it was argued that the whole truth is seldom told to children on any subject. The belief in a secret giver does not have a bad influence upon children, and oftentimes helps the real givers out of unpleasant places. If the child is to be told only the plain facts, what would become of all nursery rhymes so much relished by both young and old? There would be very little left of that song in which the father goes, gun in hand, to provide the skin of a rabbit in which to wrap the youngster. This world is full of poetry and petty deceptions. Let us have Santa Claus.



WINTER SPORTS AND PASTIMES.

Designed and Engraved for the American Agriculturist.

There is no more exhilarating sight, on a clear, frosty winter's day, than a large pond or river, firmly frozen over, the ice gleaming in the sparkling sunlight, and thronged with skaters darting hither and thither with bewildering rapidity. What fun it is to glide along with such ease; the sensation being the nearest to flying of anything one can imagine. But this is after you have had long practice at the art. We well recall the despair that overwhelmed us, when, having just learned to stand on the unsteady steel, some mischievous companions assisted us to the center of the pond, and then left us, to get back to shore as best we could. It seemed a herculean task, and was only accomplished after much tribulation.

For beginners, a skate with a moderately low iron and three straps is the best, the club skates coming on later, when more proficiency has been attained. As soon as the novice has succeeded in standing upright, he should start at once. He will at first make great use of his hands to maintain his balance, but these ungraceful movements should be avoided so soon as possible. The inside edge of the skate is the first to be attempted. Be sure to learn this thoroughly before trying any fancy evolutions. For cutting figures and other devices, the skater must also be able to skate on the outside

edge, backwards, and turn round. The most difficult forward movement is the cross outside edge, called the "Mercury" figure. This is done by crossing one leg over the other, and striking out with the foot as it comes down on the ice.

To describe a curve, or circle, on the inside edge, you must select a piece of snow, or any light object, as a center; take a sufficient run, and strike out on the inward edge. Your eyes, meanwhile, must look toward the shoulder, opposite that which directs the general movement of the side on which you turn. The leg on which you skate must be straight; the other one also being kept almost stiff, and about eighteen inches from the one you rest upon. The outside edge curve is done in much the same way, only the propelling limb is slightly bent at the knee.

The figures 8, and 3, are very good ones for practice, and when they are mastered, others become quite easy. We give a few general directions, which all persons learning to skate should be careful to observe. Let your dress be warm and fit closely, but not tight enough to impede free motion. Be certain that the ice is strong enough to bear the weight of the skaters. Should you come suddenly upon weak ice, do not stop, but pass rapidly over it; if you fall, roll toward the firmer part, without attempting to rise and walk. When a skater falls into a hole, he should extend his arms horizontally across the edges of the ice, and so support himself until a rope can be thrown to him. After an immersion in the water, the skater must, if able, *run* home as quickly as possible, pull off the wet clothes, take a spoonful of ginger in hot water, and go to bed. If these precautions are followed, there will be very little danger from the misadventures of this sport.

Edith's Floral Favorite.

BY ISABEL SMITHSON.

DOWN in the cellar of an old country house lay a heap of potatoes. Some of them were large and some were small, but all wore nice brown jackets, and all were gazing round them with their little red eyes. Not far off stood a barrel of cider, a fat old fellow, with shining brass hoops all round his body, and these hoops, he said, were golden girdles made on purpose for him to wear. Such vanity! The potatoes did not believe him, neither did the rosy-cheeked apples in the next bin, though they were not rude enough to say so. Now, every day the heap of potatoes grew smaller, for Betty, the cook, used to come down to the cellar, fill her apron with the nicest of the lot, and then go up stairs again, shutting the cellar-door behind her with a bang.

"Where are they gone?" asked those who were left, one day.

"To the bad, most likely," growled the cider-barrel. "I never had a good opinion of potatoes—they are of very low birth."

The apples blushed at his rudeness (for he was a blood-relation of theirs), but the potatoes eyed him with contempt.

"Meow! meow!" said Mrs. Puss, who had come down to watch a tempting little mouse. "I can tell you how potatoes are treated. As I sit dozing by the kitchen fire, I see the cook taking off their jackets, and drowning them in a pan of water, or else she cuts them to pieces and fries them, or roasts them, jackets and all."

"How horrible!" groaned the potatoes.

"Horrible!" echoed some empty starch-boxes in the corner.

"There is going to be company to dinner to-day," said the cat, rubbing her soft side against the cider barrel, "and I dare say all you potatoes will have to go."

"Oh, do not say that!" cried the poor potatoes, "it is too dreadful."

One little fellow among them was so frightened at Puss' words, that he made up his mind to run away, and he rolled down from the top of the pile and hid in a dark corner of the cellar.

"Just in time," said an old broom-stick near him, "for here comes the cook."

True enough, down came Betty, and putting all the potatoes into a basket, she carried them away.

"Such is life!" sighed the broom-stick.

It was very damp in the cellar, and the little potato shivered with cold.

"Would that I had gone with my brethren!" he sighed, nestling in the corner. "It is very lonely and cold down here."

"Nonsense!" grunted the cider-barrel, and the potato was afraid to say another word, so closing his little eyes, he lay quite still, and wondered what would happen next. Soon after that, a ray of sunshine crept through the dusty cob-webbed window, and a watering-can, which was hanging on the wall, cried joyfully: "Spring has come! Now I shall soon see my beautiful flowers again, and the birds and butterflies in the garden."

The sunbeam kept creeping farther and farther into the cellar until it reached the potato, and when he felt its warmth, he opened his little eyes and sighed no more. The next day it came again, and every day, and soon the potato put forth a little stem and a few tiny leaves.

"Look at me!" he cried. "Could anything be more graceful?"

"Do not chatter so," said the gruff old cider-barrel, "you make my head ache."

Every day the sun grew warmer, and little birds hopped past the cellar window. Spring had indeed come at last, and the watering-can was taken from its nail, and carried up-stairs. Then the cellar was cleared up, and the potato, with its delicate stem, was swept away in the rubbish.

"Oh, I shall certainly choke!" he cried, as a cloud of dust hid him from sight, "my beautiful leaves will be spoiled."

No one heard him, however, and he was taken up-strairs with the sweepings, and the kitchen girl picking him out of the heap of rubbish, carelessly threw him into some soft earth, which happened to be a flower-bed. Down, down, he sank, until nothing could be seen of him but his little leaves.

The warm air kissed him tenderly, golden-winged butterflies flitted past, and by degrees, the beautiful flowers budded and blossomed round him.

"How nice this is!" he said, "ever so much better than that dark, damp cellar."

He had grown so tall that he could look over the heads of all the plants near him, and one day the gardener came down the pathway telling his boy to pull up all the weeds.

"Surely he doesn't mean me!" thought the potato in alarm, "and yet he seemed to look this way. Oh, what shall I do. I feel quite faint. I almost wish myself back in the cellar again!"

He was trembling with fright, but fortunately for him, the boy began weeding at the other end of the bed, and before he reached the potato, was called in to his dinner, and then sent away on an errand, so the little potato breathed freely again.

That night a gentle rain came down, and all the flowers opened their thirsty mouths to drink, and in the morning, when the potato unfolded his green leaves, he was filled with joyful surprise to find his stem was crowned with a cluster of flowers.

"How lovely!" he cried, "now I am a flower like the rest. I need not be afraid of the gardener's boy any more, for he would not harm me!"

He waved his leaves gently, and looked round with an air of pride, for he thought himself the ornament of the garden.

Pride goes before a fall they say, and the potato's vanity was punished by a dreadful fright. One day the gardener came along and stopped to look at a rose-bush which grew next our friend, and the potato, wishing to be noticed too, tossed his head, and swung himself back and forth until he tapped the gardener on the face.

"Why, bless my heart, a potato in the flower-bed!" cried the old man, "who ever saw the like? Jim, is this the way you weed the garden—eh?"

"I was putting in some seeds for Miss Edith," the boy replied, coming up with a little bright-eyed girl "but I can finish this bed in a minute."

Edith was a pale little city child, and had come to spend the summer with her aunt in the country. She had never before seen so many flowers in a garden together, and thought that "the country" was the loveliest place in the world; she was eight years old and could read and do fancy-work, and play scales on the piano, but she did not know even the names of half the flowers in her aunt's garden, and had only just found out that seeds planted to-day, can not possibly "come up" to-morrow, however much you may water and watch them.

So when she saw the potato-plant, Miss Edith was very much pleased, and cried out, "Oh what a nice flower! It's different from the rest, isn't it—what's its name, Jim?"

"It's only a potato," said Jim disdainfully.

"Why, New York potatoes are not like that," said the little girl in surprise—"what are you going to do?" she added suddenly.

"Going to pull it up," he answered, but Edith held his arm, and said earnestly,

"Oh don't do that, for it will die, you said so."

"But it don't belong here, Miss," said the gardener, smiling at her anxious little face, "it's like a weed, and must come up. Now here's a rose for you, this is pretty."

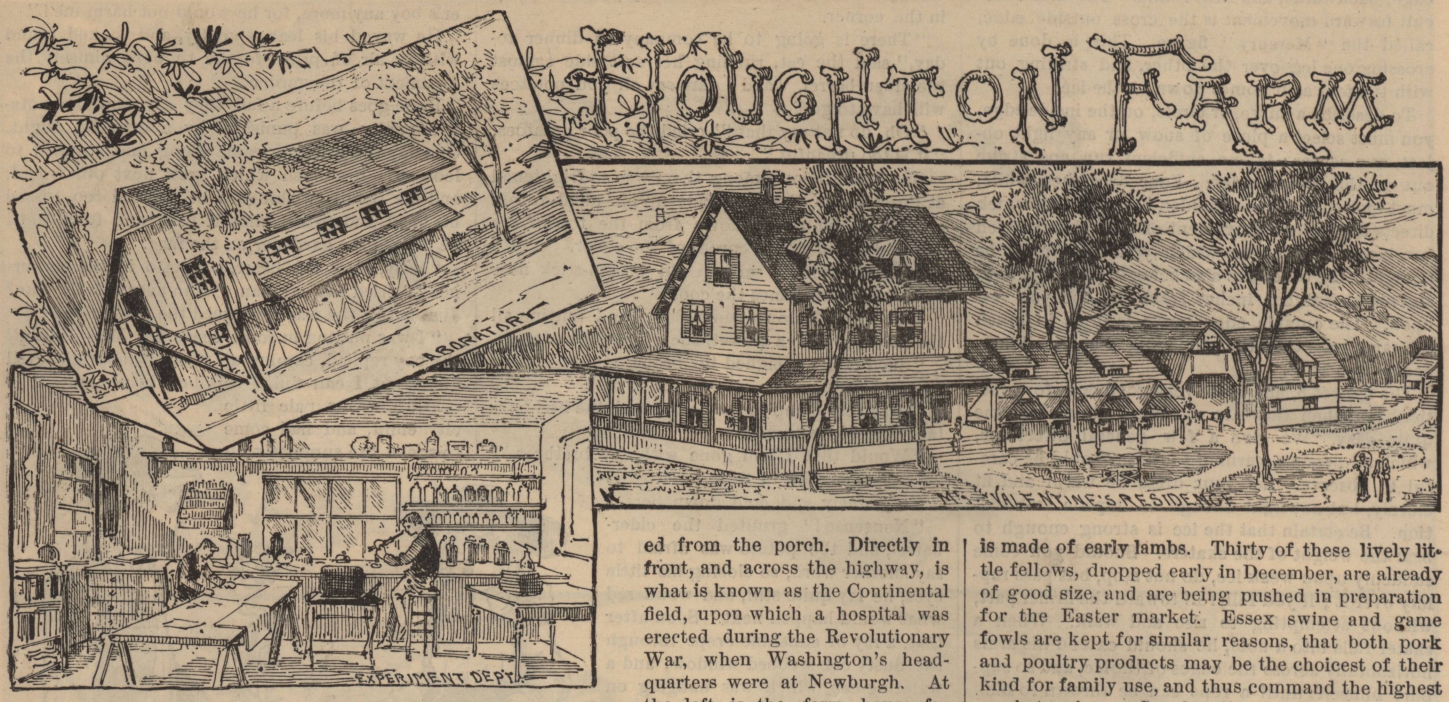
"But that is pretty too," she said, taking the rose from his hand, yet looking at the potato sadly, "see how white it is—let it stay there, please."

"It won't show, father," added the boy.

"Very well, if Miss Edith wants it so much, let it stay," said the gardener good-naturedly.

Then Edith ran away and brought her watering-can and gave her "pretty potato" a sprinkling, and the potato laughed to see that his old acquaintances did not recognize him. All summer long he was watched and petted by the little girl, and taking care of him kept her out in the fresh air so much, that she became strong and rosy, and they were happy together, helping each other to grow.

HOUGHTON FARM



The views and accompanying description of Houghton Farm will specially interest our readers who have received and are to continue to receive the benefits of the extensive valuable experiments carried on at this, now widely known Station, which begins the year with better equipment, more extensive preparations and larger facilities for securing practical results for agriculture than have heretofore been enjoyed.

The farm, together with leased lands adjoining, comprises about 1,000 acres. It lies in a narrow valley running parallel with the course of the Hudson River, and is just seven miles west from the Military Academy at West Point. The valley is enclosed in rocky, wooded hills, which at some points rise from six hundred to eleven hundred feet in height. Mr. Lawson Valentine, the present proprietor, bought this property in June, 1876. The original purchase was 600 acres and an adjoining tract of 100 acres, of pasture and tillage, has since been purchased. Two other farms are leased, so that in all 1,000 acres are under control, as above stated. A portion of the land is unavailable for farm uses, being rocky and mountainous. As this, however, has a small assessed value, while it gives control of the woods surrounding the farm and the water supply, it is a more economical feature of the estate than it at first appears, and with a moderate expenditure these apparently useless rocks and woodlands have been made to contribute to the attractions of the place and develop the æsthetic side of farm life in this rural region of Orange County.

Sweeping Views.

The residence proper is situated on the eastern side of the valley, at the base of the hills. It fronts upon the public highway leading to Cornwall, six miles distant, and is built in the center of a lawn, which stretches out on either side like a beautiful carpet of green. In the rear is a natural park, through which a winding road leads to observatories and Camp Tip-Top. The latter, comprising a Swiss cottage, cooking building, etc., affords a delightful summer resort, and however warm the weather may be in the valley below, the days and nights are cool and pleasant here. From one of the observatories on the eastern summit, the Hudson River, Catskill Mountains, and other points of interest are distinctly seen.

The view westward from the veranda of the residence is very picturesque. It embraces the entire farm, barns, outbuildings, etc., and the wooded rocky mountain range constituting the western boundary of the farm. The engraving conveys an idea of the magnificent sweep which is afforded from the porch. Directly in front, and across the highway, is what is known as the Continental field, upon which a hospital was erected during the Revolutionary War, when Washington's headquarters were at Newburgh. At the left is the farm house for various employés. Across the road are a sheep house and a large sheep barn. Beyond the Continental field are seen the main barn, dairy cottage, greenhouse, cattle barn, and farm shops, adjacent to the lovely Awessima, a clear stream which runs through the center of the valley, and in its various windings forms numerous pretty water views.

Dedicated to American Farmers.

In the proprietor's own language, this farm is dedicated to "the farmers and farms of America." He plainly sees that it can never give encouragement or guidance to any one, unless it is itself a substantial success, as a farm. Hence the first effort is to conduct the farm proper on a strictly business basis. Thus the live stock has all been selected with a view to the best practical results. Instead of the fast roadsters and professional race horses for which Orange County has been famous, the Normans have been selected, and a stallion and four mares imported, the belief being that the blood of the French horse is the best with which to secure the sturdy farm-teams and the powerful coach and carriage horses of which so few can now be found. Likewise, although in the midst of milk-producers, instead of yielding to the local preference for Holsteins and Ayrshires, a broad view of the dairy interests of the country has led to the adoption of Jerseys as the breed most likely to permanently increase the profit of American dairy cattle. And to get the very best, "Ramapo," the third and most attractive son of the champion cow, "Eurotas," has been placed at the head of the herd. Most of the animals are "registered," but to meet a legitimate and growing demand, several pure but unregistered cows of special individual merit are retained, and their offspring sold at "farmers' prices." A wider market is thus supplied; for example, recent sales of Jerseys have been made to parties in Ohio, Illinois, Kentucky, Missouri, Texas, Mississippi, and the Carolinas, as well as nearer home, and these embrace not only young bulls of most fashionable breeding, sold for $500 to $1,000 each, but others just as good for ordinary dairy purposes, and of full as high butter-breeding, sold for $10 to $50, to go into the service of well-known dairymen.

Butter Making.

The butter made on the farm is put up in most attractive half-pound brick-shaped rolls, fresh every other day, and finds a ready market in New York City at sixty cents a pound. Southdown sheep have been selected for their standard mutton qualities, as well as their adaptation to the hill pasturage and climate of the locality, and a specialty is made of early lambs. Thirty of these lively little fellows, dropped early in December, are already of good size, and are being pushed in preparation for the Easter market. Essex swine and game fowls are kept for similar reasons, that both pork and poultry products may be the choicest of their kind for family use, and thus command the highest market prices. Surplus live stock, animal products, and fruit (in the great variety and high quality for which the Newburgh region is famous), constitute the chief sales from the farm, it being a rule to consume all the staple field crops at home.

Attractive and Profitable.

It is intended to practically demonstrate that farming is an attractive, healthful, and profitable business in the Eastern States, when conducted on progressive principles, whether on a large scale or in a small way. In the course of time, the financial results will be made public. It is enough to say now, that the farm is more than paying expenses. A balance on the right side is certainly a very satisfactory showing for the present administration of the farm.

Experimental Department Proper.

The Experiment Department, is of course distinct from the farm proper, so far as finances are concerned. This is a work where it is expected that considerable expenditures must be made, with no returns except in such useful information as may result. The progress of this Department is perhaps that division of Houghton Farm in which the public are most concerned. It is under the general control of the General Manager of the farm, Major Henry E. Alvord, who is seconded in the office and laboratory, by Prof. D. P. Penhallow, Botanist and Chemist (formerly instructor in Harvard University, and for four years in Japan, part of the time at the head of the Imperial Agricultural College.) Messrs. S. B. Green and W. E. Stone, both graduates of the Massachusetts Agricultural College, are assistants in the experiment work, and more or less duties in this Department also devolve upon the Farm Pupils. There are always two or three young men residing at the Farm in this capacity, the present pupils being Mr. F. G. Main, of Wisconsin, and Mr. S. Sato, of Japan. It is intended to promulgate the results obtained in the Experiment Department by pamphlets, freely distributed, as often as there is suitable material.

Corn and Wheat Experiments.

Already there has been published in a 75-page pamphlet with maps and engravings, the First Report of Dr. Manly Miles, as Director, upon the experiments with Indian Corn at Houghton Farm for the years 1880 and 1881, together with a summary, by his own pen, of those wonderfully instructive experiments with wheat, which have been continued for forty years by Drs. Lawes and Gilbert at Dr. Lawes' (now Sir John B. Lawes) estate of Rothamsted, England.

EXPERIMENT STATION.

HOUGHTON FARM.

"DEDICATED TO THE FARMERS OF AMERICA."

Drawn and Engraved for the American Agriculturist.

This report marks a decided departure from the usual American ways of "making experiments." The proprietor devotes a part of his large farm, together with the fertilizers and labor necessary, storage room, laboratory, etc., to these crop experiments, of which the readers of the *American Agriculturist* have the benefit from time to time.

Lawes and Gilbert made no report until the fifth year of their experiments with wheat, and we should certainly not expect much from Dr. Miles at the close of the second year. Still the report is full of instruction. Those parts of the volume intended for popular reading are the prefatory notice of Houghton Farm, by the editor, Maj. Alvord; Dr. Miles' concise description of the work done, and experiments now in progress at Rothamsted; and Dr. Lawes' own statement of the principal results of his forty years of experiments with wheat upon the same land (13 acres divided into 37 plots).

Interesting and Valuable Results.

The experiments with Indian Corn at Houghton Farm, as so far reported, show:

1st. How such a work ought to be commenced—the general uniformity of the soil proved by examination and by raising crops without manure. The land is accurately laid off into fifth-acre plots, two rods wide, underdrained by a tile-drain through the center of each and accessible at the lower end for examination of the drainage waters.

2d. How it should be conducted so that all the plots and all parts of each plot should be subjected to the same influences—plowed at the same time, harrowed at the same time, planted the same day, tilled at the same time, and so on, to the harvesting, and husking, and storing, the plan being to subject each plot to precisely the same influences from first to last.

3d. They show, incidentally, a remarkable effect of drainage (noted below): they confirm the views taken at Rothamsted in regard to the relations of barn-yard manure to soils and crops, which depend not so much upon its chemical constituents as upon its physical properties, and the relations of the soil to moisture; and they indicate that the best results to be gained from commercial fertilizers will be in connection with barn-yard manure.

4th. It is clearly shown that manures affect the amount of moisture found in the grain as harvested, and that the weight of the bushel of the same kind of corn does not depend altogether upon its dryness, as usually supposed, but in a measure upon its compactness, which is influenced by the relations of the soil to moisture and manures.

The curious development of fertility by drainage alluded to, occurred in this way: Some years ago a portion of the ground now occupied by the experimental plots was used to test certain commercial fertilizers. No effect of these fertilizers was observed upon the crops of 1878, when they were applied, nor in 1879; but in 1880, after the drains were put in, a marked effect was visible, which was also noticeable in the crop of 1881. This clearly indicates, either that by means of the drainage the roots of the plants were able to penetrate deeper into the soil, and so had access to elements of fertility which had sunk beyond their reach, or that the soil through the effects of drainage was able to draw up moisture with whatever of fertility it might hold in solution, from a lower depth than before, or both of these causes might have contributed to the increased crops over this area.

It is hardly worth while to discuss the results of a single year's experiments, for the first crop, that of 1880, was raised without manure, and only that of 1881 was raised with various fertilizers, applied with the view to develop unknown facts. For continuous comparison six plots in all, scattered here and there, are left without any manure, and, to be able to reason upon the results of the other plots, several years' crops, well harvested, weighed, and analyzed, are requisite. This will come with time. Incidental results like those adduced may be looked for, besides, with interest and profit.

There are many Experiment Stations about the country. At a number of them field experiments are undertaken, but nowhere with such accuracy, with such careful guarding against possible errors, or with such promise of important results as this report indicates, may fairly be expected.

Fruit-Growing Experiments, 1882.

The Experiment Department, during 1882, engaged in some important and interesting fruit work. Diseases of fruits, especially the peach yellows and pear blight, have been made a special study, and some valuable, if not actually decisive conclusions have been reached. In relation to the above, microscopic studies were made with a view to ascertaining the normal condition of vegetable structure, in which direction much valuable data was obtained. During the six months from May 1st to Nov. 1st, a series of observations was made upon soil temperature. A set of thermometers, sunk at various depths in the soil, from the surface down to 8 feet, were read hourly, from 7 A. M. to 9 P. M. each day during this time, and for a part of the month of May, hourly observations were made during the whole 24 hours.

The object of this was to obtain correct data for future use in experiments with plant growth. Experiments were also made to ascertain the effects of cultivation and the application of fermentable manures upon soil temperature, and some very interesting facts were obtained. The rate of growth and temperature of the plants were also made an object of special study. Many other minor and incidental questions were investigated. The record of the above work, with the results obtained, is being prepared as rapidly as possible, and will appear in the form of reports at an early date.

For the present year it is proposed to continue the investigations of fruit diseases, soil temperature, and plant growth. Special feeding experiments under glass will be undertaken. Moisture tests of various kinds of woods, of which 70 species have been collected on the farm, are going on at present. These tests will all be repeated in the coming summer, with a view to determining the difference between the summer and winter condition of wood in this respect.

In the Horticultural Department full and careful records are kept of dates of planting, growth, harvesting, and of other interesting circumstances in connection with all crops and experiments. As heretofore, our readers will continue to receive the benefits of these records. Regular tri-daily meteorological observations are kept up, with the object of making a special study of the meteorology of the region.

Plants in Cellars.—Many plants are conveniently stored in cellars where they are kept during winter in a dormant state. A cellar for this use should be quite dry; if damp the plants may become mouldy and be injured. The earth of the plants thus stored, should be dry, as the plants make little or no demand upon it for moisture. Dry and moist are relative terms, and earth may be dry and yet not be "dust dry" or "killing dry." When the earth gets excessively dry, it will absorb the moisture from the roots of the plant, and that would be apt to perish. Towards the end of winter, plants in cellars should be looked to, and where the earth has become dust dry, it should be treated to a slight amount of water to make it damp, not enough to excite the plant and start it into growth.

Grasses for a Pasture.—"L. G. D.," Woodburne Co., Iowa, intends to start a permanent pasture, and asks how much of each of the following grasses he should sow per acre, viz.: Timothy, Orchard-grass, Kentucky Blue-grass, English Blue-grass, Red-top, Alsike Clover, and White Clover. We do not know what grass our correspondent has in mind as "English Blue-grass," as that is not a name in common use. As he does not enumerate Hard Fescue, which may well form a part of the pasture, we will substitute it for English Blue-Grass, whatever that may be. We are not informed of the character of the soil, whether light or heavy, dry or moist. There has been very little done in this country in laying down permanent pastures with a mixture of grasses, and as we are without much experience to serve as a guide, our correspondent must look upon his attempt in the light of an experiment. The usual quantity of mixed seeds is from 40 to 45 pounds per acre. If we were to experiment with the grasses named, upon land of medium fertility, we should try the following proportions:

	Lbs.
Timothy (*Phleum pratense*)	4
Orchard-grass (*Dactylis glomerata*)	10
Kentucky Blue-grass (*Poa pratensis*)	8
Hard Fescue (*Festuca ovina* var. *duriuscula*)	8
Red-top (*Agrostis vulgaris*)	4
Alsike Clover (*Trifolium hybridum*)	2
White Clover (*Trifolium repens*)	4
Total	40

Enormous Business.—The banks of New York City alone, during 1882, transacted business through the Clearing House of over forty-seven billion dollars, or nearly three times the total assessed value of all the real estate and personal property of the United States.

Railroad Building in 1882 exceeded all former years, about 12,000 miles of new track having been laid. If we allow a strip of land ten miles wide along each side of these new railways to be benefited, the aggregate of land thus helped amounts to one hundred and fifty-three million acres, or one and a half million farms of a hundred acres each. If these lands are thus increased in value only fifty cents per acre, a very low estimate, it amounts to over seventy-five million dollars.

Lucern.—"R. H. W.," Hudson, N. H.—Lucern is a perennial; indeed a large share of its value depends upon this fact, as when well established, it may be cut for several years in succession. It should be sown in spring, as soon as the soil is in good condition. As it is somewhat doubtful if lucern will endure your climate, experiment with a small quantity at first.

Neodesha Bonds.—"R. J. R." The Treasurer of Neodesha, Kansas, writes us that the bonds now due, will be taken up with a fresh issue. It is not probable that this, or any other Kansas town, desiring Eastern settlers, will repair its credit by failing to redeem a small issue of bonds. That would be the very worst kind of policy.

A Thousand Bushels of Small Coins.—One who has not thought of it will be surprised at the number of dimes, nickels, and cents it takes to make up the yearly loss, and have a supply to "go round." The U. S. Mint reports for the last fiscal year the new coinage of nearly seventy millions of these three pieces alone, viz, 38,581,100 cents; 11,476,600 five cents; and 3,911,100 dimes. If packed closely, the cents would fill 562 bushel boxes; the nickels, 334 boxes; and the dimes 42 boxes. The 25-cent and 3-cent pieces will make up the 1,000 bushels. The curious may verify this by estimating the diameter of dimes at $^5/_7$-inch, of copper cents $^3/_4$-inch, of nickels $^5/_6$-inch; and the thickness of dimes $^1/_{22}$-inch, of cents $^1/_{18}$-inch, and of nickels $^1/_{14}$. The copper cents are a convenient small measure of length, being just $^3/_4$-inch across—a row of 8 making half a foot, 4 a quarter foot, and so on. The copper cent weighs 48 grains—or about 9 to the ounce, or 146 to the pound, avoirdupois.

Some New York City Items.—During 1882, about 300 milkmen were detected in selling adulterated milk, and paid $9,500 in fines.—Keepers of dogs paid $5,138 for permits.—Of liquor dealers, 9,083 paid license fees, amounting to $531,000.—The Police made 18,000 arrests, of which 4,100 were for felony.—The deaths were 37,951, in an estimated population of 1,279,560; that is, about one in every 34; but a large number of the deaths were among travellers and strangers in the city.—The deaths have averaged 1 every 14 minutes, day and night, week-days and Sundays.—The births were 27,321.—The marriages were 11,085.—There were about 2,000 alarms of fire, and four million dollars in losses.—New buildings numbered, 2,561, costing $44,778,680, to which adding $4,267,000 expended in altering 1,675 buildings, makes a total of nearly fifty million dollars for buildings.—The Castle Garden Labor Bureau found employment for thirty-eight thousand people (28,679 men, 9,479 women).

American Merino Sheep.—"C. F. W.," Orleans Co., N. Y., asks how the American differ from the Spanish and other Merinos. What are known as American Merinos originated from several importations from Spain. By care in breeding, and probably the climate has its influence, the quality of the wool has been much improved, and its weight greatly increased. These, in general terms, are the differences, but for an account of the points considered of value by breeders, you must consult a work on Fine-wooled Sheep.

To open the way for a trial, we make this novel offer, and the **best yet.** *For* **15 3-Ct. STAMPS** *we will mail the following twelve seed packets of* **mammoth** *vegetables—the largest and best of their class and* **good for a first premium** *at any Fair. We offer a* **$25 PRIZE** *for every successful exhibitor of these vegetables at his State Fair and a* **$10 PRIZE** *for the same at his County Fair.*

Cuban Queen Water-Melon, handsomest, largest (90 lbs) and best; **Giant Rocca Onion,** have weighed 3½ lbs.; (see Cut); **Large Tours Pumpkin,** has a record of 320 lbs.; **Giant Bleichfield Cabbage,** new, large and certain header; **Bay View Musk-Melon,** mammoth, 20 to 25lbs., but luscious; **Perfection Beet.** "Simply Perfection"—*R. Horticult. Society, Eng.* **Spanish Monstrous Pepper,** the largest in cultivation; **Yard-Long Bean,** singularly long pod, 2 to 3 feet; **Precursor Tomato,** largest, first-early; **Stonehead Lettuce,** earlier than Tennisball; **Giant Stuttgart Radish,** large radishes in 5 to 8 weeks; **Mammoth Squash,** immense, have weighed over 200 lbs.—**Catalogue Price, $1.30; all for 15 3-cent Stamps; 3 for $1.**

Our ILLUSTRATED CATALOGUE fully describes this offer and everything else **for the Farm or Garden.** You ought to have it. **FREE.**

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The **No. 2** hand machine, price, **$6,** sows from 4 to 6 acres per hour; **No. 1,** price, **$30,** from 10 to 12, *at the same time sowing far more evenly than by any other method;* also saves the Seed. Send for Circular.

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"EARLY ESSEX."

We take great pleasure in introducing this valuable **New Extra Early Potato, "EARLY ESSEX."** Circulars giving descriptions and full particulars sent on application. (Electrotypes, $2.00 each.) Our ANNUAL CATALOGUE of Garden and Farm Seeds, Agricultural Implements, etc., ready for mailing January 1st, free to all applicants. New and choice seeds a specialty. Address

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CATALOGUE of New, Rare, and Beautiful Plants for 1883, will be ready in February with a colored plate.

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Free to all my customers; to others, 10 cts; or a plain copy gratis. Catalogues of Seeds, Roses, Orchids, Fruits, etc., gratis. **JOHN SAUL,** Washington, D .C.

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WELCOME OATS

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ACTUAL WEIGHT THIS YEAR OVER

50 POUNDS PER LEVEL BUSHEL.

The Handsomest Oats Ever Seen.

A REAL BOON TO FARMERS.

It is with a great deal of pleasure that we invite the attention of all progressive Farmers and Planters to a new variety of Oats, not simply because they are *new*, but because they are of surpassingly fine quality.

THE WELCOME OATS

Are by all odds the **heaviest, handsomest,** and will undoubtedly everywhere prove the **most productive variety** of Oats known. They are *far ahead* of the Belgian, and that is saying a great deal, as there are no other Oats we know of that can equal the White Belgian. The Welcome Oats now in our warehouse are the admiration of all visitors—every one pronouncing them the finest Oats ever seen. They weigh over **fifty pounds per level bushel;** the grain is very large and handsome, very plump and full with thin, white, close fitting husk. In appearance and in handling them, they seem more like extra large, plump grains of white wheat. A gentleman of considerable experience, on examining samples of these Oats, said to us that he would sooner have one bushel of them for feeding than two bushels of nearly any other Oats he had ever seen. For the manufacture of Oatmeal they are *far superior to all other varieties.* The Welcome Oats stool heavily, with strong, straight straw, of good height, always standing up well, and crowned with long, beautiful branching, well-filled heads; with good cultivation they will yield 80 to 135 legal bushels per acre; this may seem almost beyond belief, but will be easily understood when it is considered that each measured bushel weighs **more than one and one-half bushels of any ordinary Oats.**

We have for some years made a specialty of Seed Oats. We are familiar with all the newer varieties, and we pronounce the Welcome Oats as the finest we have ever seen. We know that every farmer on receipt of a sample will endorse our opinion.

PRICE OF WELCOME OATS.—25 cts. per packet of **two ounces.** Five **2-oz. pkts.** for $1.00, by mail, postpaid, to any address. In each packet a card, bearing our *fac-simile* signature, is enclosed, which entitles the purchaser to compete for

$155.00 IN CASH PRIZES.

We have such unlimited confidence in the great superiority of the **New Welcome Oats** over any and all other varieties, that we desire to have careful trials made of them in every section of the country. In order to stimulate good cultivation of this splendid new variety of Oats, we offer the following liberal cash prizes:—**$100.00 for the largest quantities of Oats** raised from one package of seed. First prize, **$50.00 Cash;** second prize, **$25.00 Cash;** third prize, **$15.00;** fourth prize, **$10.00.**

$55.00 for the Six Largest and Best Heads of Welcome Oats sent to us this year:—First Prize, $20.00; Second Prize, $15.00; Third and Fourth Prizes, $10.00 each. **COMPETITION OPEN TO ALL** who purchase one or more twenty-five cent packages of the Welcome Oats. Each package contains *two ounces* of seed, and all the packages are carefully put up, to insure fair competition. All reports and all heads competing for the premiums must be received by us not later than October 20th, 1883. The prizes will be paid promptly on the first of November, 1883. Of course, those who desire to do so, can plant more than one package of the Oats; but in such cases each lot of Seed must be kept separately, and one of our **Competition Cards** returned to us with each report. **WONDERFUL RESULTS** may surely be expected if fair treatment is given the Welcome Oats. We shall expect our friends to send us some splendid heads, which we will have photographed. Aside from the **money value** of the prizes offered, we are confident that those who are successful in carrying off one or more prizes can justly be proud of the **honor**—as the reports will be published and widely circulated.

There is sure to be **an immense demand** for Seed next year, and for years to come. Farmers who get Seed this season will be sure to realize a handsome price for all the Welcome Oats raised for several years, until their neighbors get supplied. Every one who sees these Oats will want them.

A FAIR OFFER! Any one who sends us 25 Cts. for one package, or $1.00 for five packages of Welcome Oats, and does not admit, on examination, that these are **the best Oats ever seen,** can return them and we will refund the price paid. The Editor of **The American Agriculturist** has samples of **Burpee's New Welcome Oats.**

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Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

The Sales of Wheat reported in the New York Produce Exchange alone, during 1882, were over six hundred and forty-seven million bushels, of which about ninety-five per cent were speculative sales, the entire receipts of wheat being about forty-four million bushels. Of corn, about fifteen million bushels were received; the sales were four hundred and fifty million bushels. Of oats, receipts sixteen million bushels, and sales one hundred and fifty millions. Chicago can doubtless show still larger speculative sales.

Foreign Silver Coins.—New Values for 1883.—Immigration and commerce are bringing among us many foreign coins. The great production of silver is depreciating its value, and our Government on each January 1 fixes the official valuation for the year. During 1882, the price of silver declined about 1¼ per cent—an ounce of silver sinking from about $1.13¼ to 1.12^{3}/_{10}$ (or $1.1374 to $1.12295). The gold value of the new dollar of 412 grains is 80 to 81 cents now. The official values for 1883 are: for the Mexican dollar, 88 cents, 12 mills; sol of Peru, peso of Ecuador and of U. S. Columbia, and the bolivana of Bolivia, 81 cents, 2 mills each; the peso of the Argentine Republic, 96¼ cents; the florin of Austria, 40 cents, 1 mill; the rouble of Russia, 65 cents; the rupee of India, 38 cents, 6 mills; the yen of Japan, 87 cents, 6 mills; the mahbul of Tripoli, 73 cents, 3 mills.

Cattle Quarantine Established.—The U. S. Cattle Commission have located quarantine grounds for imported cattle, where they will be kept until all danger of their introducing infectious diseases is past. The grounds consist of 40 acres on the Passaic River, 11 miles from New York City, accessible both to water and railway; the latter will generally be used, except for large lots warranting the employment of a special steamer.

Supporting Fence Posts.—A simple method of supporting iron and small wooden posts with a cement, was described in Vol. 39 (1880), page 222. There are frequent inquiries for the results of experience. Will those who have used the method in any form please send an account of how the plan works, and in what manner they applied it?

An Improvised Wire Stretcher.—Mr. J. A. Burton, Lawrence County, Indiana, writes us: I went six miles from home to put up a wire fence. The stretcher was lacking. My tools—one dull hatchet; and help—my boy, eight years old. I found a small rail with a sun-crack in the end. Slipping this over the wire behind a barb, and using the post as a fulcrum, my boy would tighten the wire while I drove the staple one post back. Perhaps some of your readers cannot readily find a rail with a suitable sun-crack, but this may enable them to think of a substitute.

Value of Crooked Timber.—When it is convenient to convey timber to places where ships are built, crooked timber is even more valuable than any other. But there are many uses for "natural crooks" on the farm. A bent timber as a brace, etc., is often convenient in a barn, or other out-building. By the use of crooked timber a frame may be made much lighter, and more durable than where only straight logs are used. There are many implements in which crooked timber is best, as the knees of wood sleds, stone boats, etc. The farmer should study to use a natural bend in a tree whenever an opportunity offers.

Quince and Grape Cuttings.—"W.W."—The cuttings should have been made last autumn, and kept in earth until spring. If this was not done then, it will answer, though not so well, to make them at once, in the first mild weather, and bury them in soil or sand. Cuttings of the quince should be of last season's growth, and six or eight inches long. In early spring open a trench with one straight side; place the cuttings against this side, about six inches apart, and with two buds above the surface. In filling in the trench, press the soil firmly against the bottom part of the cuttings. Grape cuttings are made with two or more buds, according to their distance apart. They are set out in the same manner, save that only one bud is left at the surface. While the cuttings of some varieties of grape will root readily if treated in this manner, others will not. The simplest method with those which are difficult to raise from cuttings, is to layer them.

"Sub-Irrigation," is the name given in California to a method of watering, for which great advantages are claimed. A system of concrete pipes is laid far enough below the surface to be beyond the reach of the plow. Water is let into the pipes under slight pressure (two to five feet), and there is an arrangement by which it is allowed to flow into the soil at desired points, and come in contact with the roots of the trees, vines, and other plants, without wetting the surface. It is claimed that this method produces all the good results of surface irrigation, with the use of only one-fourth or one tenth of the water required in ordinary irrigation, while the surface of the soil does not bake. The plan is no doubt an excellent one for some places, but it is not new. In one form or another it was described in the *American Agriculturist* several years ago. Those who are selling "rights," must have patented some of the details, as the method of applying water in pipes, below the surface, has long been known and used.

Frozen Onions.—"H. J. B.," N. J.—It does not hurt onions to freeze them, provided they can thaw very gradually. It will be well to cover the barrels with hay or straw, and keep them frozen as long as may be. Do not move them about while frozen. Usually, onions suffer more from being kept too warm than from the cold.

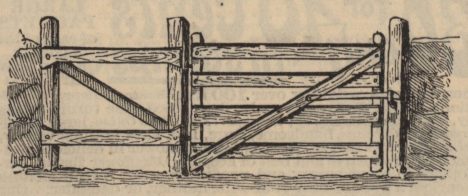
Replanting an Orchard.—"M.Z.," Dayton, O., lost the apple trees in his orchard by frost. He proposes to set out trees again on the same land. The orchard is now in grass, and he asks if it should be plowed up, and if it will be better to set the new trees in the intervals of the old ones, or plant them in the same places.—If the grass has been mowed for several years, it is likely that the soil needs enriching. Turning over the sod, especially if a good dressing of manure can be applied upon the grass, will greatly improve the soil. We should prefer to avoid the old holes, and give the trees new places, as, aside from the fact that the former trees exhausted the soil where they stood, there are probably old and decaying roots left in the ground, which may injure the roots of the new trees.

Preserving Fence Posts.—"J. M. H.," Moscow, N. Y. The use of coal-tar as a preservative does not appear to be so successful as was anticipated. While a post coated with this is protected from the effects of the moisture in the ground, it does not prevent decay from taking place in the interior. Various solutions that will penetrate the wood have been proposed. One of the simplest of these is to soak the post in a saturated solution of sulphate of copper (blue vitriol), and when the liquid has penetrated the wood, let it dry, and then soak it for a few days in lime water. From what we have seen of this method, having used it for small garden stakes and labels, we should be disposed to try it upon posts if a preservative were required. It has the merit of being much cheaper than most of the other mixtures that are proposed.

Grafting Potatoes.—"W. D. J. H.," Plumas Co., Cal., asks: "Did you ever hear of grafting potatoes to produce a new potato, or one combining the qualities of both varieties used?"—Several years ago, many attempts were made in England to produce graft hybrids. One variety had all its eyes removed, and an eye of another variety was inserted in it. In this manner, potatoes showing a cross between the two were produced. Nothing practical resulted from these experiments, though they excited much interest at the time.

"Great Guns!"—What are we coming to? The monster Krupp cannon, which many of our readers saw at the Centennial Exposition, will be only a pocket-piece compared with the gun of the early future. Italy has beaten the world in the size of her war steamship, protected on its sides with steel-faced iron plates, well on to two feet thick. And now England must have guns that will smash through such walls. Already a breech-loading Armstrong gun has been made, weighing 200,000 pounds; length 39 feet (nearly 2½ rods); breech diameter, about 5½ feet; muzzle, 2½ feet; bore, 17 inches diameter; carries a ball or bolt of chilled iron, weighing over a ton (2,005 pounds). More than half of its barrel on the inside is steel, and this is covered with compact iron rings, welded into a solid mass. It is calculated to stand an interior firing pressure of over 60,000 pounds on each square inch! It was recently fired 18 times, the powder charges in some cases being over a third of a ton (or 771 pounds). Initial velocity, 1,838 feet in a second. Think of a ball of hardened iron, a ton in weight, flying through the air 21 miles a minute! This speed would carry it from the Atlantic to the Pacific, or from New York to London, in about 2½ hours, and starting round the world at 5 o'clock in the morning, it would be home before midnight. The carriage is made so compact that two such guns occupy less space than one old one, and the hydraulic loading machinery is so simplified that a lady's hand can move the levers which open the breech and close it, put in the 700 pounds of powder, and the ton-weight projectile. And they say it will now be quite easy to make and work guns of 300,000 to 400,000 pounds weight!

Support for a Gate.—Mr. J. S. Ulrey, Wabash Co., Ind., sends us a drawing of his plan for keeping a



gate from sagging. It is simply an extra post connected by scantling with the post to which the gate is attached, as shown in the engraving.

Is it "Gypsum" or "Plaster?" asks a young reader of the *American Agriculturist*, and older heads might ask the same question. Farmers usually talk of putting "plaster" on their land—but it would be better always to call it gypsum. This substance is composed of sulphuric acid and lime, combined with considerable water, all together forming a solid rock. It is simply ground fine for application to land, and is still "gypsum." When the water is driven off by heat, and it is made into a fine powder, it is called "plaster of Paris," because used for a hard, white finishing coat in plastering walls. On restoring the water driven off by heat, that is, stirring the dry powder with the proper quantity of water, it quickly sets hard, to form moulds, plaster casts, images, cornices, center pieces, etc.

Improvement in Cabbages.—Two varieties of cabbage have been so much improved by cultivation in this country, from seeds grown here, that the same varieties from imported seeds are so much inferior as to seem like different varieties. The Wakefield, a leading early variety, is one of these. To distinguish the improved home-grown strain, it is called Jersey Wakefield. The Brunswick, a German early variety, was greatly improved by a gardener named Fottler, and is now much larger and finer, though not quite so early as when raised from imported seed, and known as Fottler's Drumhead.

Bermuda-Grass.—"A. E. C.," Hockley, Tex. The specimen you send is the true Bermuda-grass, but it does not disprove our statement that "this grass is not known to produce seed in this country." We do not assert that it cannot, or that it never will produce seeds, only that no seed bearing specimen—and botanists have been watching it for many years—has yet been seen. A great many specimens have been sent us to show that the plant bore seeds. A large share of these were not Bermuda-grass, but Crab-grass, which somewhat resembles it. Others, like the one sent by you, have the remains of flowers, but on careful examination with the microscope, not even a rudiment of a seed was found. We should really like to see the seeds, as they must be produced in some countries.

Lice on Apple Trees.—"T.T.B."—We answered your inquiry by mail, but our letter in time came back marked "not found." We wrote in substance as follows: The lice you mention as attacking your apple trees are the Woolly Aphis, known in England as the "American Blight," although it is a well established fact that this insect was brought from the Old World to this country. It differs from other plant-lice in covering itself with fine, white, cottony threads, which give the appearance of "mould" that you mention. They are very easily managed on the trunk and branches. Any stiff brush will kill them. But most persons like to apply something with the brush. For this, stir into a quart of soft soap a tablespoonful of kerosene, and, when well mixed, pour on sufficient warm water to make it so thin that it may be readily applied, and use it with the brush. For those lice which live just below the surface, lime-water is a remedy. Slake a peck of lime in a barrel, as for making whitewash. When slaked, fill up the barrel with water. By the next day the water will be perfectly clear. Use this, thoroughly, around the trees.

Plum Suckers.—"W.W.," Benzonia, Mich., has numerous suckers of plum trees, and asks how he can use them for stocks. As a general thing, seedling stocks are preferred to suckers, as trees grown from these will continue to throw up suckers. The shoots should be removed from the trees with as many roots as possible, and planted in nursery rows and allowed to grow one season. They may be budded the next year, or, if grafted, it should be done very early, before the buds swell. As the graft often outgrows the stock, it is safer to insert the cions below the surface of the ground.

Many People Killed by Animals.—Perpetual war has always existed between man and most other animals; the dog and the horse are usually on our side. Omitting accidents, the destruction of human life by animals is very small in this country—perhaps not 200 a year, and these largely from the bites of rattlesnakes and cobras. Even these might be termed accidental, since these serpents only bite in self-defense when come upon unawares. But it is quite different in some countries. Take British India, for example; the recent official report gives the total loss of life during a year thus: Killed by tigers, 889; by wolves, 256; by leopards, 239; by bears, 75; by wild elephants, 58; by hyenas, 8; by other animals, alligators, rhinoceroses, wild boars, etc., 1,232; and by serpents, 18,670! Tigers, leopards, and allied animals killed nearly 44,000 cattle, to say nothing of sheep and goats. During the year the Government paid for killing 4,558 wolves, 3,303 leopards and tigers, 1,014 hyenas, 991 bears, and 254,963 poisonous serpents.—A recent writer estimates that since the Christian era, 200,000,000 people have been killed by animals.

The Massachusetts Horticultural Society is not so venerable that it cannot adopt new methods. Following the example of the much younger New York Horticultural Society, it now issues a Bulletin, reporting its monthly meetings within a few days after the session. This allows absent members and others to read the papers and discussions while they are yet fresh, instead of waiting, as before, until the end of the year.

The Essex Hybrid Squash.—This was obtained by a gentleman in Essex, Mass., by crossing the "Hubbard" and the "Turban," a very late and an early variety, each standing first in its class. The Essex Hybrid is valued by gardeners near Boston on account of its rapid growth and maturity, which allows it to be planted after the worst insect enemies are out of the way, and still ripen a crop. In planting early potatoes, every fourth hill is left vacant, to be afterwards planted with squashes. This may be done as late as July 4th, and the squashes will mature before frost.

Trouble with Evergreens.—"M.E.B.," Greenwich, Conn., finds that the stems of his Norway Spruces, that portion which grew last year, fall off in great quantities. If M. E. B. will cut open the twigs, he will probably find a caterpillar—a "worm" of some kind, which, after it made its growth, cut away the stem, in order that the wind might break it off and thus allow the insect to reach the ground. If this is found to be so, then all the fallen twigs should be gathered and burned, to prevent an increase of the insect.

Speculative Sales.—The sales of breadstuffs, grain, hog products, and cotton, constantly reported in Chicago and New York, give one no idea of the amount of those articles in the markets. The speculative sales of wheat and corn may amount to many million dollars in a day when there is not actually on hand a single million bushels. The New York dealers in cotton, for example, claim that none is sold that is not really here. Yet the recorded sales of the last cotton year at this one point amount to nearly thirty-three million bales, while the average crop of the entire country is only about six million bales. The sales of wheat and corn during a year, in New York and Chicago alone, amount to many times the entire crop grown.

Collards or Coleworts?—A subscriber asks what are the Collards, so generally cultivated in Southern gardens. Collards, as they are generally called at the South, and in England known as Coleworts and Collets, are partly grown cabbages, which are used before they commence to head. Any cabbage may be cultivated as a Collard, but there are some varieties which are grown only for this use, in which the habit of forming a head is more or less broken up.

We have, from time to time, described the various swindles practised upon farmers and other rural residents, by those who go about the country, making house to house visitations. While these go to their victims, another class wait for their dupes to come to them. Farmers and all other strangers, who for business or pleasure visit any large city, should be aware that there are gangs of scoundrels who make it their business to lay in wait for, and entrap every one who has the appearance of a stranger.

The Peter Funk Auctions

were, some years ago, doing a great business. These auction shops were in the most frequented streets, and their trade, the selling of worthless watches and bogus jewelry, was carried on openly and boldly. Whenever a stranger could be tempted into one of these dens, he was quite sure to be fleeced. He sometimes made a complaint to the authorities, and if he went with the officers to make arrests, the victim failed to identify a single person who was concerned in the swindle. Several of these shops were under the same management, and as soon as a sale had been made in one of them, the auctioneer and his confederates all went to one of the other shops, and exchanged places with the inmates, and when an attempt was made to arrest, no one engaged in a sale could be found. All other methods of breaking up these mock auction shops failing, at length a police officer was stationed in front of each, with instructions to warn all who were tempted to enter, of the character of the business. This completely broke up the concerns. "Peter Funk"—the name often given by the auctioneer, if arrested, now no longer sells worthless jewelry and watches. He sometimes sells furniture "of a family breaking up housekeeping." It is remarkable that the family is a long while in "breaking up," as the furniture is sold in the same house every day for months. Such sales are supplied with showy but miserable furniture, made for the purpose. Bureaus have been sold without drawers, the fronts being fastened in place, and other shams are common.

Auction Sales of Cigars

are just now among the leading auction swindles. There are several stores, in the busy streets, where the "going," "going" of these chaps may be heard all day long. A store is hired, boxes of cigars—or more likely cigar boxes—are placed in the window and on the shelves, and a red flag is hung at the door. The auctioneer cries and hammers away, to an audience of two or three confederates, with usually one venerable looking old rascal among them. If a stranger, attracted by the noise, looks in, bidding goes on lively. If a smoker, he may be tempted to bid, when a lot of ten boxes is going, and he can get it by bidding five dollars. The usual trick is this: The stranger thinks he buys the lot of five or ten boxes for his bid, but soon finds that the bid was of that amount for each box. There are witnesses to that effect, and the buyer is often frightened into paying a high price for cigars which are worth nothing. A stranger in New York or in any other city should avoid all auctions.....Another trap is laid by what are known as

Banco Steerers.

These were formerly more prominent in Chicago than elsewhere, but now every large city is infested by them. They promenade the principal streets, and waylay the passengers from the depots and ferry boats. When one of these chaps sees a well-to-do looking person, who is evidently a stranger, he rushes up to him, shakes his hand, with: "How *do* you do, Mr. Jones, when did you come down, and how did you leave all the good people at Littletown?" The stranger may say: "You are mistaken, sir; my name is not Jones; I am Mr. Smith, of Four Corners." He will not walk far, before a confederate of the first will salute him as "Mr. Smith," and insist on inquiring about "the folks at Four Corners." This opens the way to a more familiar acquaintance, and the man from "Four Corners" is induced to accompany his new found friend to look at some recent purchase he has made. There a game of cards is in progress, and in a short time the stranger is persuaded to play. He wins again and again, and loses with astonishing regularity. He soon finds himself largely in debt, and is fortunate if he escapes with only the loss of the ready money in his possession. The "game" is an old one, and the "danger signal" has often been raised to warn the unwary. But no "game" is more successfully or more frequently played. Hudibras thinks "the pleasure is as great of being cheated as to cheat," and perhaps it is on this principle that so many worthy people are made the dupes of sharpers. A case in point occurred a few months ago in Boston,

Banco-steerer Fitzgerald and Charles Francis Adams

being the conspicuous parties. Mr. Adams, an aged and honored citizen, was taken in hand by a plausible, well-spoken young man, and conducted to a den occupied by sharpers, where he was induced to play cards and forced to give his checks for a large amount of money, his alleged losses. Banco-steerer Fitzgerald reckoned without his host. He supposed that Mr. Adams and his family would be deterred from making the circumstances public, and upon their silence he depended for the quiet enjoyment of his ill-gotten gains. But his dream was rudely dispelled by the unexpected conduct of the Adams family, who hunted up Fitzgerald and his associates, and prosecuted them to the full extent of the law, as Fitzgerald, now in prison for his crime, has found to his cost. These Banco-steerers seek their victims everywhere, not only in city streets, but on steamboats and the cars.

There is but One Safe Course

for those who travel or who find themselves in a strange city. That is, to repel the approaches of every one who is disposed to be too familiar. Do not admit that you are a stranger in the city to which you are destined, and decline all offers to serve as a guide. Above all, never enter a building of any kind with a person unknown to you.

Since the above was in type, an illustration of the necessity for the warning has been furnished by

A Distinguished Stranger.

He was not from the rural districts and unused to cities, but came from the old country as a poet and an exponent of æsthetics and a lecturer on the beautiful. He thought "small beer" of the Atlantic, Niagara was an "utterly utter" disappointment, and our fondness for cast-iron stoves an offence to his sense of the sweet-pretty. Oscar was one day accosted on the street by a young man who was very glad to meet him. The young man was "Mr. Drexel," so he said, a son of the celebrated banker; he had seen the poet in his father's banking house, and took the liberty, etc. As Oscar had been in the office, he accepted the "younger Drexel" as all right, and accompanied him to a house in one of the uptown streets.

Some men were playing a game with dice, and "young Drexel" played and won largely. The poet was asked to play; he did so, and won. Encouraged, he won more. The stakes were enlarged, and Oscar did not win, but lost, and lost again. Determined to recover his losses, he played on, until he lost in all $1,160. He gave his checks for that sum, and suspecting, in spite of "Mr. Drexel," that all was not right, he drove in haste to the bank and stopped payment of the checks. He then visited the police station, but, with true poetic abstraction, could not tell what street the house was in, and the police could do nothing. Oscar was asked to look at the pictures in the Rogues Gallery, where he soon found the portrait of his friend "Drexel" in that of a person known to the police as "Hungry Joe," and a noted Banco Steerer.

Oscar soon left for home—he could find nothing beautiful in this "beastly" country—yet he cannot deny that he was most beautifully swindled..... It seems that the bait so freely scattered in the form of circulars offering to dispose of

Counterfeit Money, or "Queer,"

does sometimes prove effective. A farmer in Kentucky was a short time ago fascinated with the offer that for $300 he could get $3,000 in greenbacks. These were said to be printed from a plate stolen from the Government, and were practically genuine. This man made the journey from Kentucky, bringing his son, from whom he kept his secret, met his man at a hotel, gave him $300 in good money, and was given a parcel. At once the man was advised to hurry out of the city, and was met on his way to a ferry by a police officer, who recognized in his companion a well-known swindler. There was the same old ending to the story. The parcel for which he had paid $300, when opened, was found to contain a brick and a bag of salt done up in waste paper. The Kentucky man went home, having travelled far and paid dearly for a lesson in common honesty. When his neighbors learn that he was ready to deal in counterfeit money, he will hardly enjoy their salutations.

Too Sudden to be Trustworthy.

A Chicago firm, R. E. Kendall & Co., are flooding a part of the West with circulars for "Mutual Investment Clubs." These circulars solicit subscriptions at $10 per share for investments in grain, provisions or stocks. The latest of these "Mutual Investments," is "Club 13," which it is claimed has made 209 per cent or $20.90 for each $10 share, during the last six months. This is a rate of profit of which even the Bonanza kings have never dreamed, and we caution the anxious inquirers who address the *American Agriculturist*, to be careful how they invest their money in these attractive but dangerous schemes. Money is not made by such rapid methods. Least of all can it be so made by "margins" on the necessaries of life. The best use for these circulars is as fire kindling. It is a safe rule to pay no heed to manifestoes that make extravagant promises of fortunes without work. Dollars represent hard work in some way or other, as farmers well know. It is known that

Sharpers who prey upon the Community

find little apparent difficulty in procuring lists of names of expected victims. There are men who make it a business of furnishing these lists in assorted styles, to suit the sharper who desires to use them. If young people at school are to be corrupted, names are gathered from school and college catalogues. It is easy to procure these catalogues under the pretence of having a son or daughter whom the applicant desires to place in an institution of learning. County, city, town and village directories supply names for other purposes. The columns of newspapers are also drawn upon. In some underhand way or other the names are procured and are often used for the vilest purposes. A letter, one of many lying before us, comes from Creston, Ohio, and advises us, that "that little town" is flooded with small books of an indescribable character. We have seen these books and can say to all, "hands off" from all such documents. Our correspondent at Creston will do "the boys" of his town a great service by stopping the circulation of these books, which he says he can do. Its end is corruption and suffering. We will not name the vile thing. Enough has been said to point out the evil.

Readers of the *American Agriculturist* who receive circulars and other documents of the kind, described in the "Sundry Humbugs" department of this paper are requested to forward them to the editors, who will make it a business to expose fraudulent imposters who set these traps for the unwary and unthinking. The *American Agriculturist* has done good service heretofore in this direction, and is hopeful that in the future it may be even more successful in saving the money of its readers.

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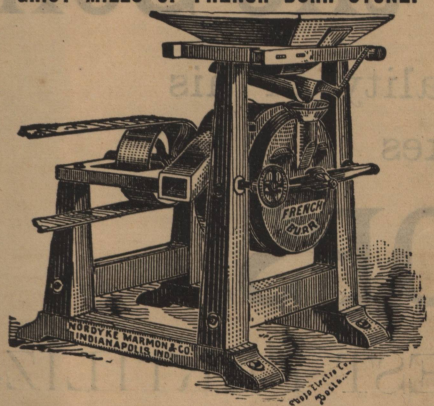

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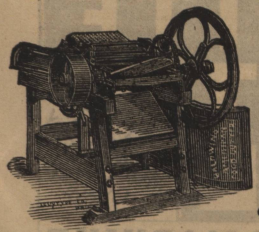

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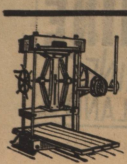

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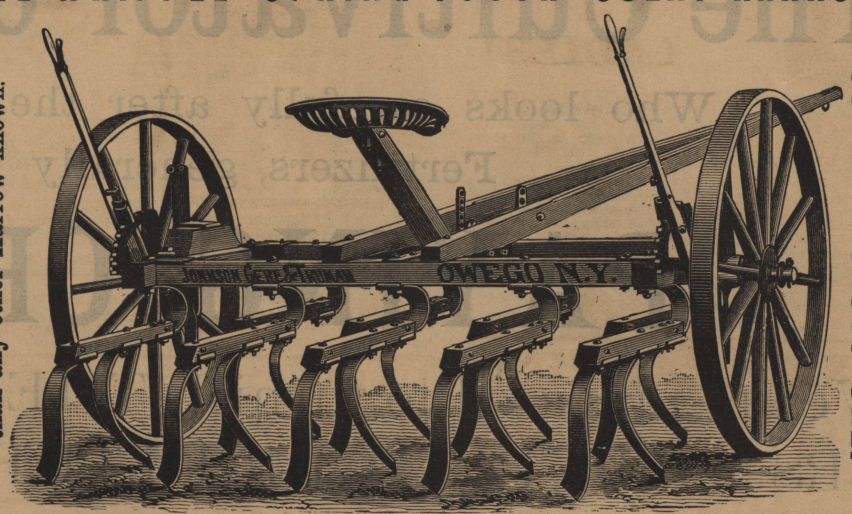

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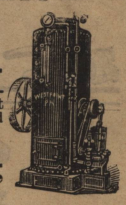

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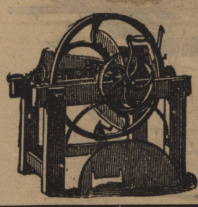

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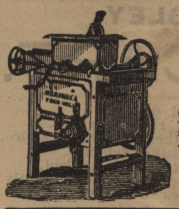

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